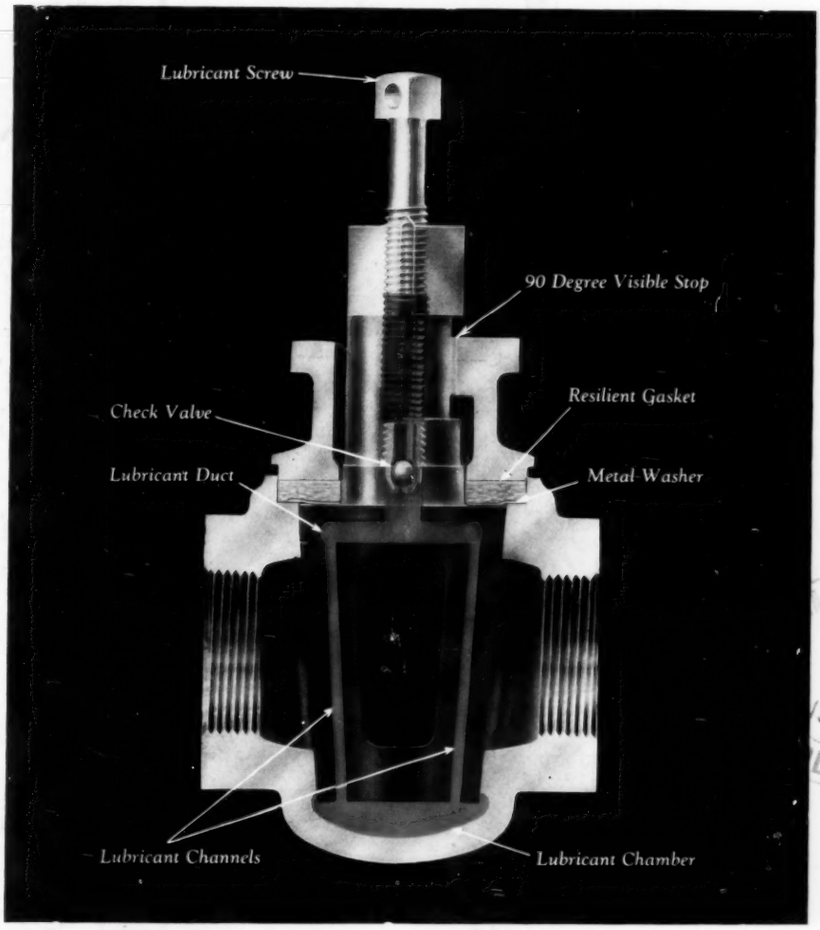
WESTERN GAS

ctober
1927

20 Cents
the Copy

Lubricated Valves *for* Gas Plants

Won't Stick Merco Nordstrom Plug Valves *Won't Leak*



Merco Nordstrom Valve Co.

Subsidiary of The Merrill Company

San Francisco, 121 Second St.
Chicago, Peoples Gas Building
Cleveland, Ohio, 325 Engineers Building
Western Factory: Oakland, California

MERCO

Engineers—Manufacturers

New York, 11 W. 42nd St.
Houston, 1315 Petroleum Bldg.
New Orleans, 1501 Masonic Temple Bldg.
Eastern Factory: Belleville, New Jersey

OCT 15 1927

A MONTHLY JOURNAL DEVOTED TO THE WESTERN GAS & APPLIANCE INDUSTRIES

A Full Line of Street Department Supplies

Pipe Gang Tools

Goodman *Improved* Safety Gas Main Stopper

THE genuine Goodman Stopper is instantly recognized by the name Goodman which appears on the Improved Patented Locking Sleeve. All genuine Goodman Stoppers are now equipped with this sleeve. Efficient as the Goodman Stopper has always been, the new locking sleeve makes the shut-off still more effective and positive. Stopper cannot slip—gas cannot pass.

GOODMAN STOPPER
Reg. U. S. Pat. Office

DEPENDABLE

BUILT IN THREE TYPES

TYPE A—Invisible Seams or Seamless Bag.
TYPE B—Reinforced Seams; heavier and stronger than Type A.
TYPE C—Canvas Covered Bags for use in Mains coated with Tar or Oil. This Bag is different from any other because the lining is loose inside the canvas while the canvas cover itself is fitted snugly to the tube and neck of the bag, allowing the pressure to pass on to the canvas cover, the lining itself being used only as a seal. Rugged, durable and built for wear, the inner bag is partially protected against the effects of tar or gas liquor.

When ordering, specify type desired ***Sent on approval***

GAS MAIN BAGS

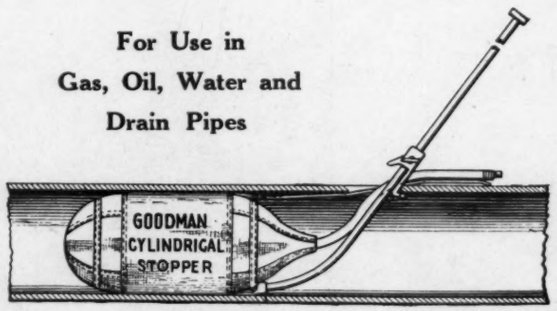
Combination Rule, Level and Protractor

To simplify the work and save valuable time of both foreman and welders when making pipe connections.

No. 86
Drafting Scale and 8ths and 16ths inch.
Price - - - $2.00

No. 87
Outer Edge Brass Bound.
Drafting Scale and 8ths and 16ths inch.
Price - - - $2.50

For Use in Gas, Oil, Water and Drain Pipes



Patent Pending

Air Line Mask
With or Without Blower

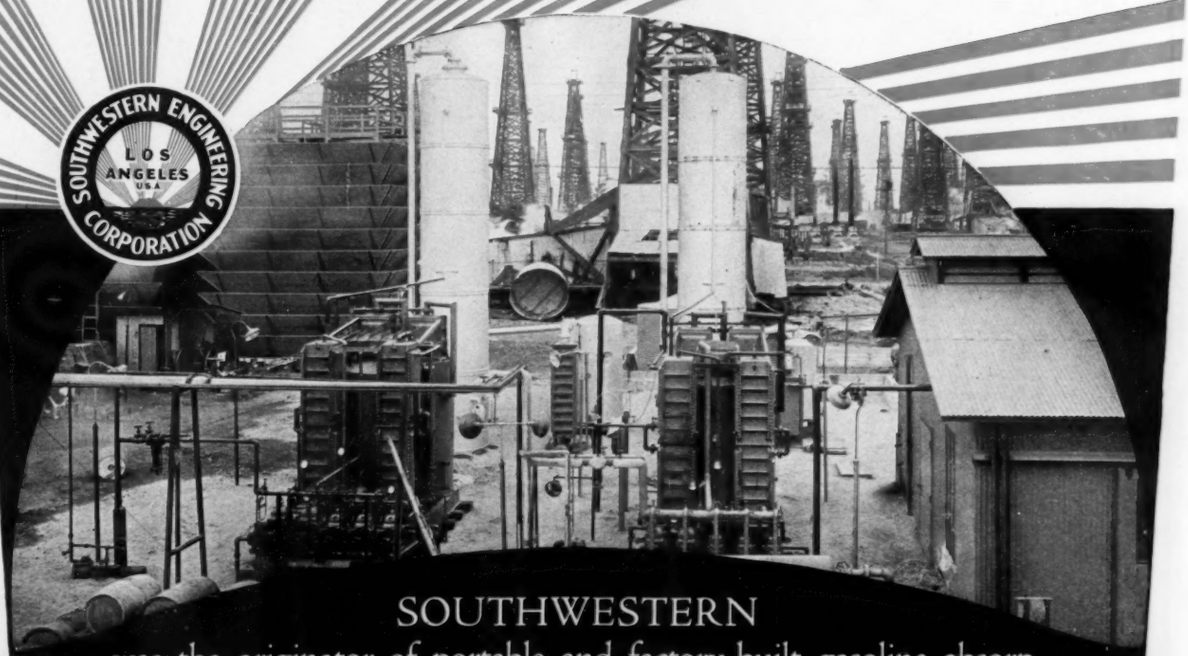
Safety Gas Main Stopper Co.

523 Atlantic Avenue, Brooklyn, N. Y.

Pacific Coast Representative, C. B. Babcock Co., San Francisco, Calif.

SOUTHWESTERN PORTABLE AND FACTORY BUILT GASOLINE ABSORPTION PLANTS

SOUTHWESTERN ENGINEERING CORPORATION LOS ANGELES U.S.A.



SOUTHWESTERN
was the originator of portable and factory-built gasoline absorption plants and now offers complete units with gasoline capacity ranging from: 500 to 20,000 gallons per day.
Flexible Efficient Dependable.

SOUTHWESTERN ENGINEERING CORP.
1221 HOLLINGSWORTH BLDG.
Los Angeles, Calif.

Branch
Joplin National Bank Bldg.
Joplin, Missouri

and
90 WEST STREET, NEW YORK CITY

Branches
Western Bldg., Amarillo, Tex.
Mayo Bldg., Tulsa, Okla.

4803

WESTERN GAS

626 S. Spring Street,
Phone TUcker 8982
Los Angeles, Calif.

447 Sutter Street
Phone GArfield 2772
San Francisco, Calif.

Official Publication Of The
Pacific Coast Gas Association

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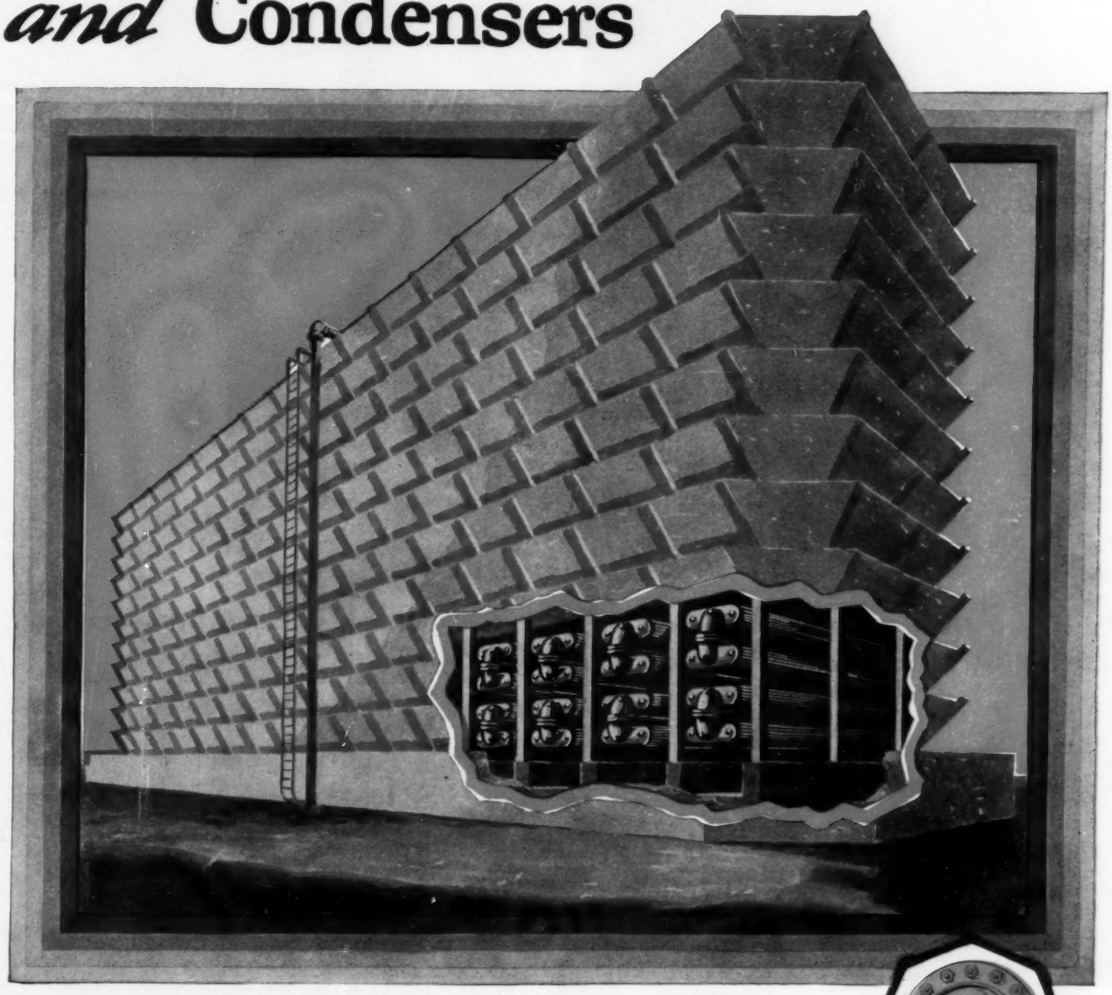
BRAUN

Open Type Coolers *and* Condensers



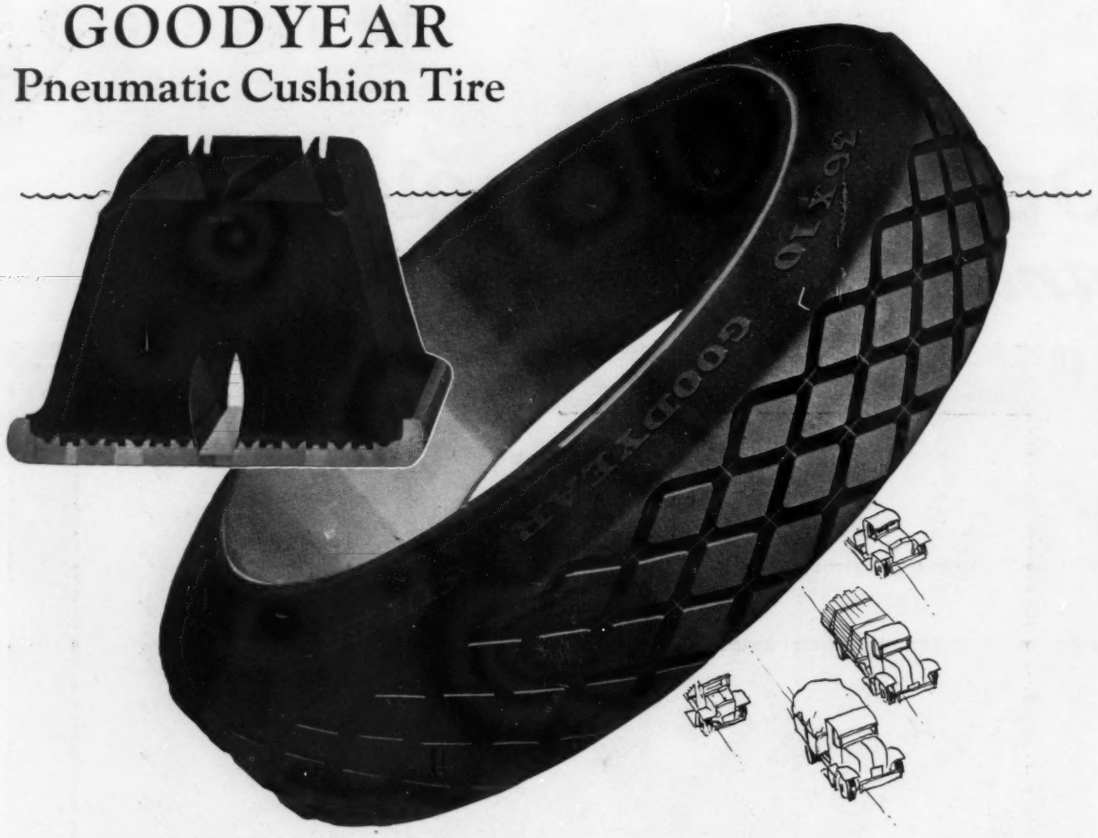
DESIGNED structurally to form a compact unit with the standard Braun Cooling Tower. There is an obvious advantage in purchasing tower and open cooler as a unit from one manufacturer, whose guarantee covers both.

C·F·BRAUN & CO
Manufacturing Mechanical Engineers
ALHAMBRA·CALIFORNIA
NEW YORK·DALLAS·TULSA
U·S·A

The New

GOODYEAR

Pneumatic Cushion Tire



This new Goodyear will give you everything you want in a truck tire—traction, durability, cushioning and freedom from trouble.

It is as high in cross section in all sizes and higher in some sizes than any other make.

It is lower in price, quality and size considered, than any other tire.

It exceeds any tire previously built in cushioning qualities.

It actually costs less per mile to operate.

This new Goodyear Pneumatic Cushion Tire is available in the 5-in., 6-in., 7-in., 8-in., 9-in. and 10-in. sizes in the famous All-Weather Tread. Also in the 5-in., 6-in. and 7-in. sizes in the plain tread.

Come in and see this tire—or telephone and we'll bring one to you for your inspection.

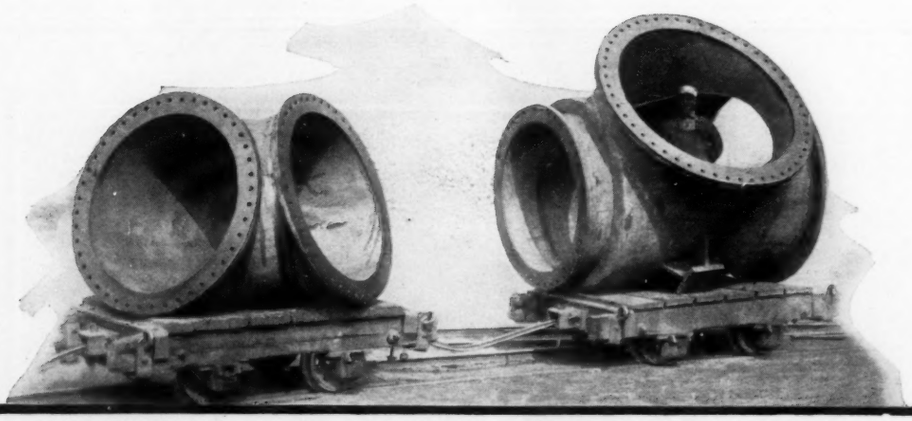
"A Tire for Every Need"

Truck Tire Service Co.

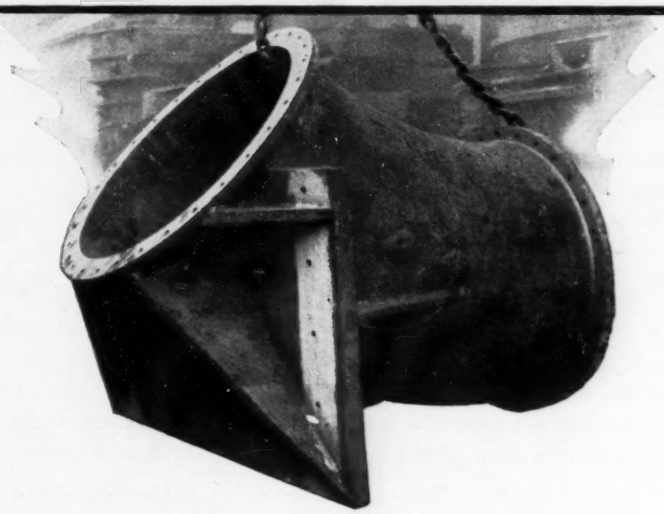
HOLLYWOOD
6523-Santa Monica Blvd.
Telephone HO-5524

LONG BEACH
220-East Anaheim
Telephone-62279

1244 East 8th Street—TRinity 6565
LOS ANGELES CALIFORNIA

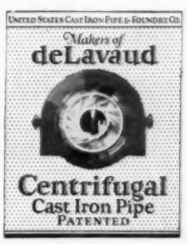


Large standard fittings and special castings



In our various plants we have unusual facilities for handling the largest standard fittings and for making especially heavy castings.

WHILE standard connections should be adopted as far as possible, it sometimes happens that an exception has to be made to meet unusual conditions. When such conditions arise communicate with our nearest sales office. Our equipment is so complete that oftentimes the castings can be designed to fit equipment already available at one of our plants. This saves the cost and lessens delivery time.

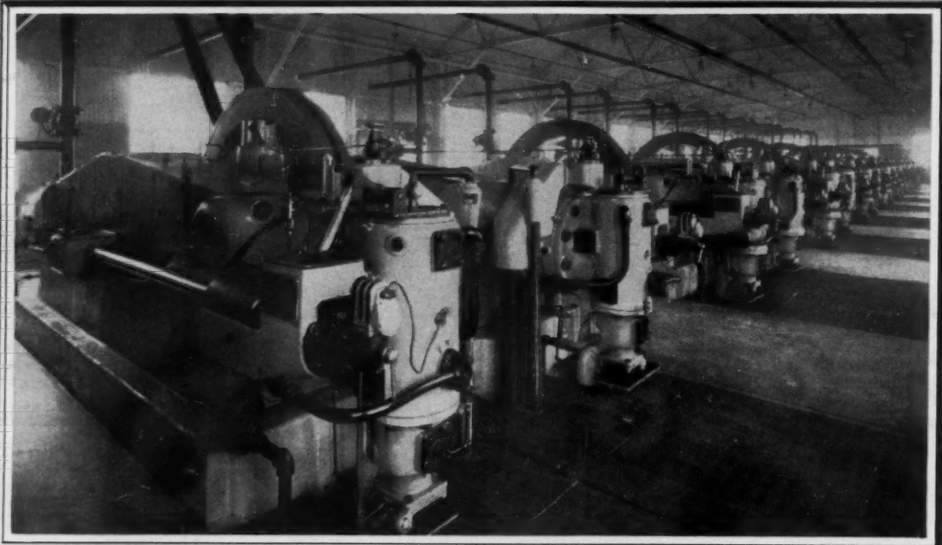


United States Cast Iron Pipe and Foundry Company

General Offices:
Burlington, New Jersey

SALES OFFICES

Philadelphia: 1421 Chestnut St.
Chicago: 122 So. Michigan Blvd.
Birmingham: 1st Ave. & 20th St.
Buffalo: 957 East Ferry Street
Cleveland: 1150 East 26th Street
New York: 71 Broadway
San Francisco: 3rd & Market Sts.
Pittsburgh: 6th & Smithfield Sts.
Dallas: Akard & Commerce Sts.
Kansas City: 13th & Locust Sts.
Minneapolis: 6th St. & Hennepin Ave.



Looking Down a Long Row of Whirling Coopers

Quietly but powerefully they are doing their job, requiring but little attention yet giving back a service day after day which gladdens the hearts of their operators and fattens the income of their owners.

Have you ever found a Cooper operator anywhere who wasn't loyal to his Cooper? There just isn't a real man living who can turn traitor to a station of Cooper engines because they are so faithful and require so little in return.

This is another reason why so many companies are turning to Coopers and also why once they use them they seldom change.

THE C. & G. COOPER COMPANY

Mt. Vernon, Ohio

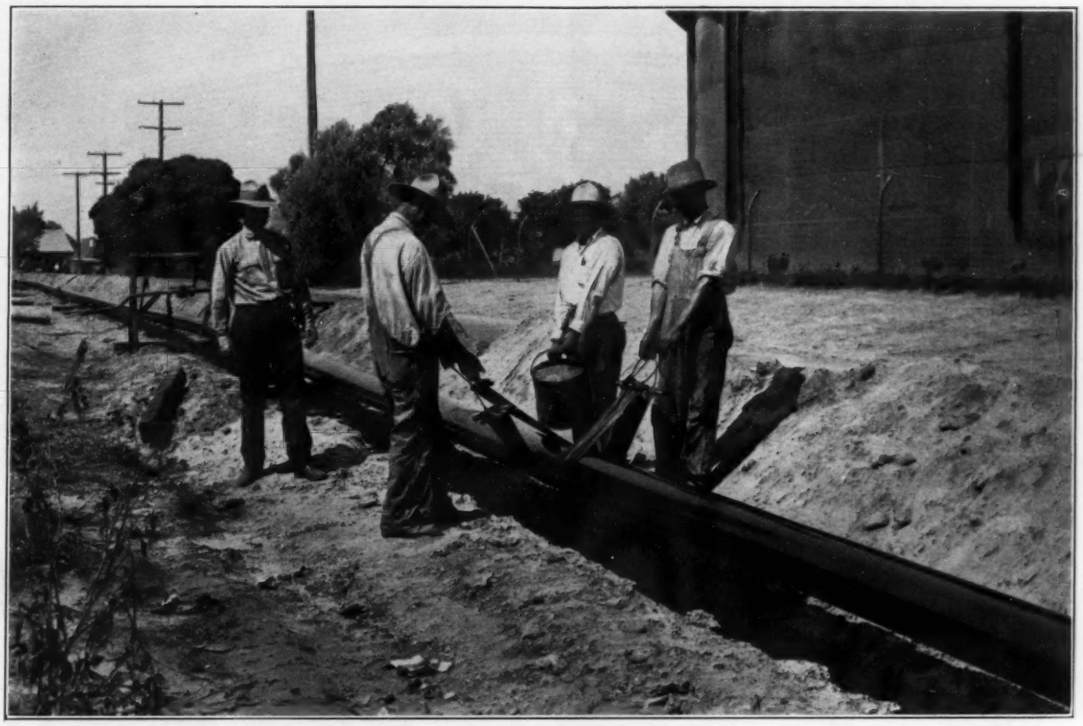
1605 Kirby Bldg., Dallas **604 Kennedy Bldg., Tulsa**

649 Olive St., Los Angeles

COOPER

A SUPERIOR

Pipe Line Protective Coating Applied Cold



Applying "McEVERLAST" Electrolysis Proof Coating to eight-inch gas main of Southern California Gas Company at Colton, Cal.

"McEVERLAST" Electrolysis Proof Coating

A recognized product, composed principally of blended Trinidad Lake asphalt and gilsonite, which has been subjected to 6 volts, 30 amperes of electricity for 44 days without breaking down (Smith-Emery, Testing Engineers).

No skilled labor is required to apply "McEVERLAST"; no personal injuries to crew account of burns, etc., because the application is **COLD.**

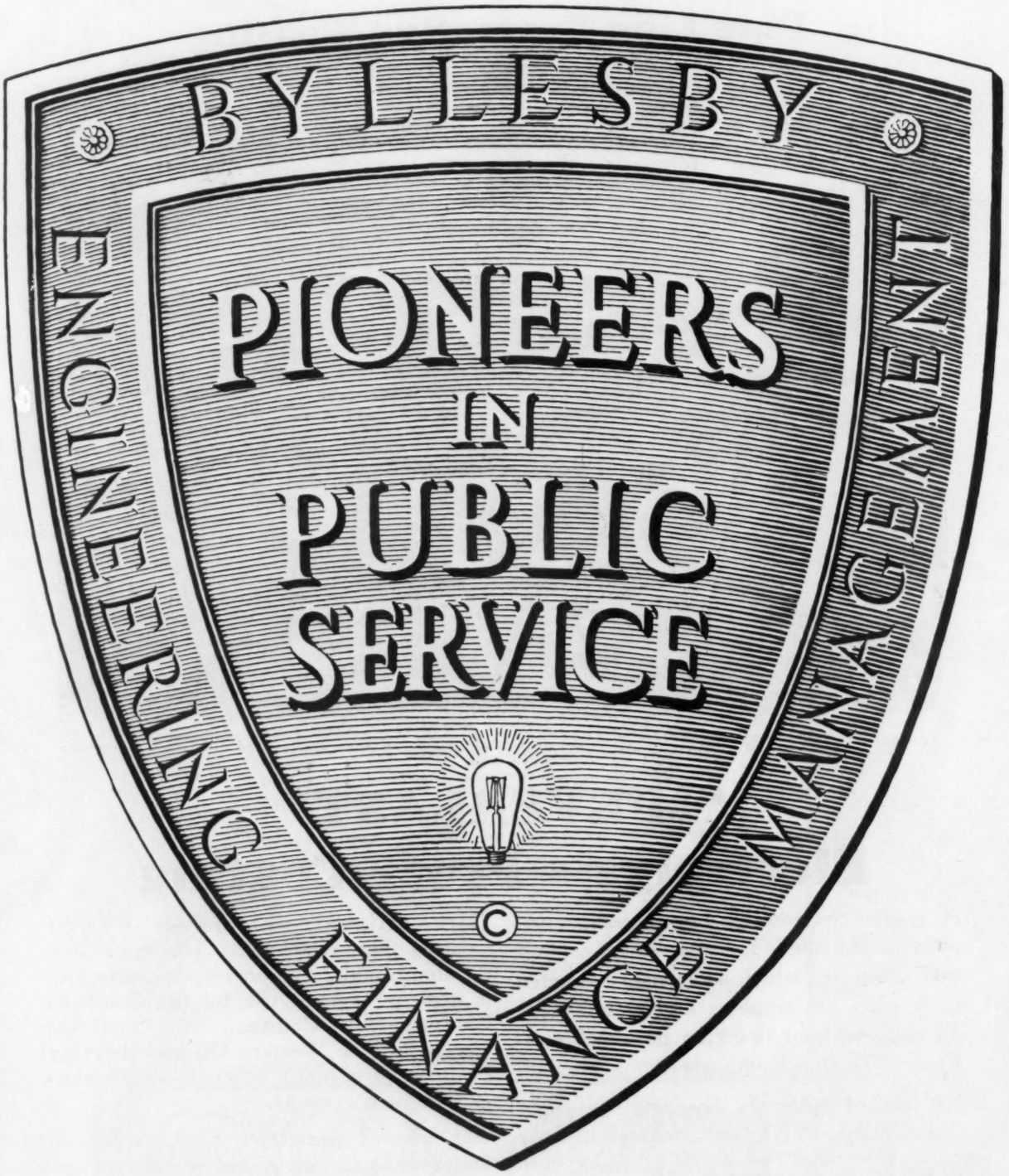
"McEVERLAST" Electrolysis Proof Coating has proven its efficiency and economy, under the most severe tests, and is now in general use by the Southern California Gas Company; the Shell Oil Company; the Western Oil and Refining Company and many others having underground pipe systems.

Our line of protective coatings for all materials is complete and we ask an opportunity to fill your requirements.

Everlasting Paint and Sales Company

1110 Board of Trade Building

Phone TRinity 3196 **Los Angeles, California**


BYLLESBY
PIONEERS
IN
PUBLIC
SERVICE
ENGINEERING
MANAGEMENT
FINANCE
©

Subsidiary and Affiliated Companies of

Standard Gas and Electric Company

supplied 63,834,474,000 cubic feet of manufactured and natural gas to over 503,400 customers in 219 cities and towns during 1926. The combined companies have daily manufacturing capacity of 101,771,000 cubic feet, in addition to important natural gas production sources; holder capacity of 47,583,000 cubic feet, and 8,230 miles of mains. The gas utilities of the Standard Gas and Electric System include

Fort Smith Light & Traction Co.
Louisville Gas & Electric Co.
Equitable Gas Co. (Pittsburgh)
Mountain States Power Co.
Northern States Power Co.
Oklahoma Gas & Electric Co.
Pittsburgh & West Virginia Gas Co.
San Diego Cons. Gas & Elec. Co.
Southwestern General Gas Co.
Wisconsin Public Service Corp.

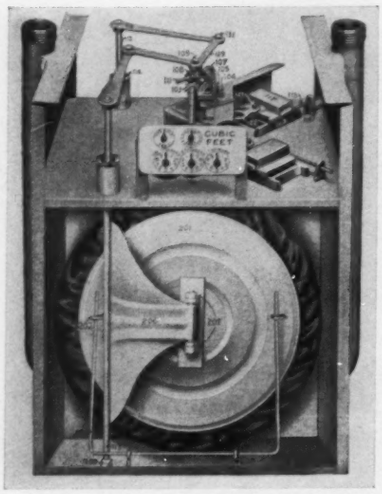
Through the subsidiary and affiliated public utilities of the Standard Gas and Electric System, gas, electric power and light, street railway, telephone and steam heating services are variously supplied to important commercial, industrial and financial centers in nineteen states—a total estimated population of 5,600,000 in more than 1,337 communities. Among the principal cities and towns served are Pittsburgh, Minneapolis, St. Paul, Louisville, San Francisco, Oklahoma City, Pueblo, San Diego, San Francisco, and Tacoma.

The organization was one of the pioneers in development of the group plan of engineering-management, in the use of the most modern equipment and methods of construction, in the publication of complete standardized audits and reports, and in the development of the Customer Ownership plan of equity financing through which over 100,000 residents of the territories served have become shareholders in the operated companies.

Byllesby Engineering and Management Corporation

Engineers—Managers

Chicago **New York** **Pittsburgh** **San Francisco**



Correct Adjustment and Accuracy

THE entire object of the meter is to secure accurate measurement. In testing the meter a known amount of air or gas is passed through the prover and then through the meter. If the meter does not register the same as the prover the tangent is adjusted to correct the error. This tangent adjustment positively cannot vary through the operation of the meter itself. The mechanical motions involved are correct, as the meter is so constructed as to keep these mechanical parts in the proper relation one to another. Therefore, the proper adjusted meter will give accurate measurement. This is why the meter is accurate in the first place and why it stays accurate over a long period.

Pacific Meter Works

of the
American Meter Company, Inc.
Northwestern Representative

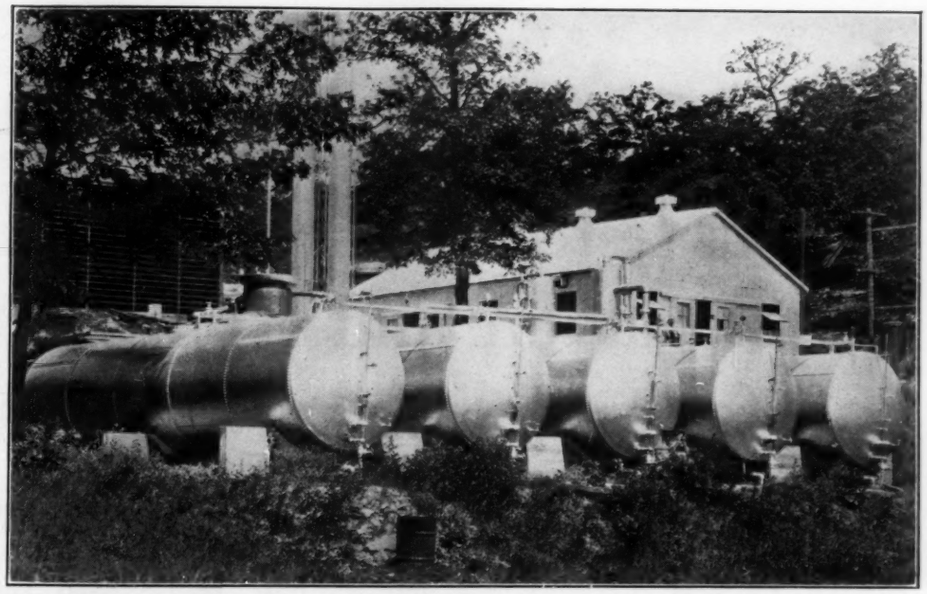
SAN FRANCISCO
495 Eleventh St.

PORTLAND
Northwestern Gas and Electric Equipment Co.

LOS ANGELES
2118 Atlantic St.

Charles Page Interests—Bruner Station nr. Sand Springs, Okla.

Tanks, Bridges and Metal Buildings coated with Bitulumin.



"Southern Exposure"

HARD ON PAINTS

Sun's ultra violet Rays cause, rapid surface breakdown

Aluminum paints largely immune

Correctly made aluminum paints like Bitulumin are largely immune to destructive ultra violet rays. They will outlast the best oil and zinc paints by two to one.

Bitulumin forms a protective coating of tiny aluminum flakes like shingles held firmly together by its moisture proof liquid vehicle. It is both light proof and weather proof.

Because Bitulumin deflects approximately 86% of sun rays it makes for cooler surfaces and in the case of tanks reduces evaporation.

Bitulumin altho widely used for painting oil storage is equally efficient on tank cars, metal buildings, refinery equipment, still towers, water tanks, bridges, etc.

Bitulumin, put up in double containers to insure fresh mixing, is manufactured by Hill, Hubbell & Company Manufacturers of a special line of paints and protective coatings for the oil industry.

HILL, HUBBELL & COMPANY

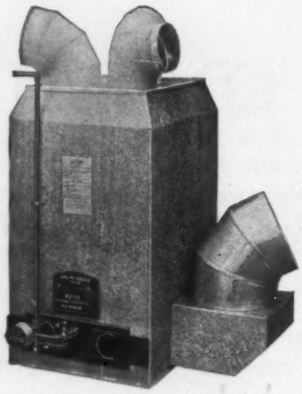
Manufacturers of
Highest Grade Oil Industry Paints and Pipe Line Coatings
Factories at SAN FRANCISCO and TULSA

District Offices:

LOS ANGELES
SEATTLE
HOUSTON
PORTLAND
NEW YORK CITY
BALTIMORE

the PAYNE FURNACE

Was tested by the American Gas Association and Approved For Safety ... Efficiency ... Durability



The Payne Furnace Company is one of the first Furnace Manufacturers in the United States to receive this A.G.A. Approval.

SAFE. Because of complete combustion. *Safe* because the furnace is welded throughout.

EFFICIENT. Because loss of heat is reduced to a minimum. Abundant heating surface produces active radiation and more heat units are delivered for amount of gas consumed.

DURABLE. Because flames do not encounter any surface of furnace interior. Constructed of finest sheet iron noted for freedom from impurities which cause rusting.

The Blue Seal indicates compliance with the specifications established by the U. S. Bureau of Mines, the U. S. Public Health Service, the U. S. Bureau of Standards and the Testing Laboratory of the American Gas Association.

More than thirty thousand Payne Furnace installations during 14 years of Payne service.

PAYNE FURNACE & SUPPLY CO. INC.

Main Office, 338 Foothill Road, Beverly Hills, Calif.
Branch: 3810 Broadway, Oakland, Calif.
Branch: 115 E. Union St., Pasadena, Calif.
Branch: 478 Sutter St., San Francisco, Calif.

Westinghouse Fluid
Positive Gas Meter

INDUSTRIAL METERS

Years of actual service under the most trying conditions have made the Westinghouse Fluid Positive Gas Meter the standard for accuracy of measurement in the gas industry.

Its all metal construction makes it almost indestructible. The metal parts are not impaired in any way by the action of the gas. All working parts are practically in equilibrium and the meter is therefore extremely sensitive to small volumes as well as large volumes of gas.

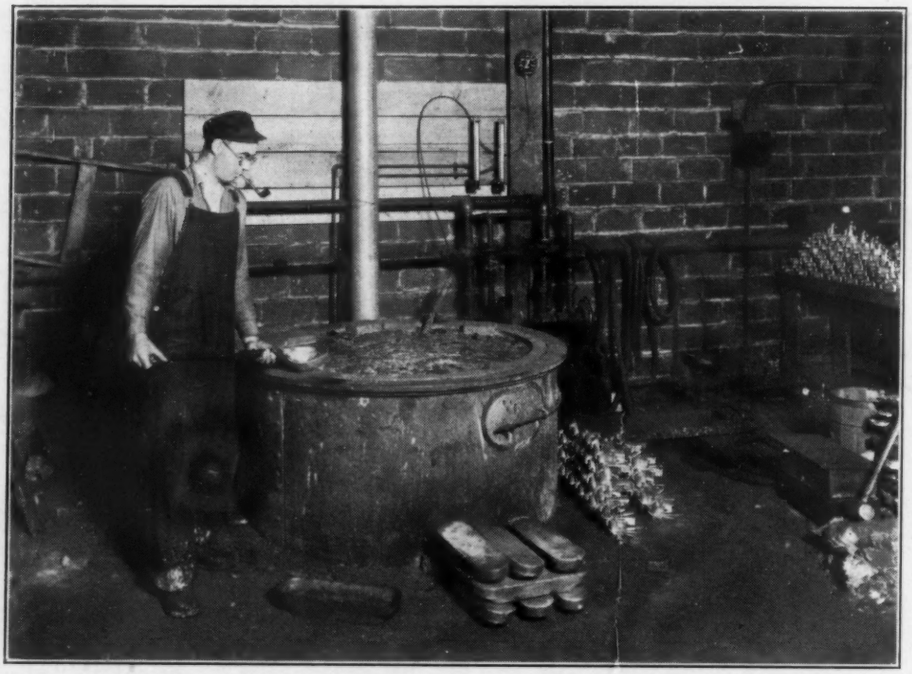
If you have an industrial meter problem, use a Westinghouse Fluid Positive Meter. It will cost less in the end.

PITTSBURGH EQUITABLE METER COMPANY
PITTSBURGH, PA.

Branch Offices

50 Church Street, New York, N. Y.
Republic Bank Building, Dallas, Texas
Kennedy Building, Tulsa, Oklahoma
1433 Main Street, Columbia, S. C.
Mutual Building, Kansas City, Mo.
Peoples Gas Building, Chicago, Ill.
Union Bank Building, Los Angeles, Cal.
715 Tenth Avenue North, Seattle, Washington
331 Rio Grande Avenue, Salt Lake City, Utah

Again— Gas chosen for melting metal



Metal melting pot used to reclaim metal from the dross and scraps of type metal used in newspaper work.

At the Gorman Metal Works, San Francisco, the big melting pot pictured above is fired by gas.

Gas was chosen because it is easy to control. The temperature of the metal is kept at exactly 700 degrees Fahrenheit. And because gas is so clean and safe, the fire hazard is eliminated.

P G and E engineers will serve you

The same engineering service that helps the above company is also yours for the asking. Just phone or write to the nearest Pacific Gas and Electric Company office.

PACIFIC GAS AND ELECTRIC COMPANY
P·G·and E·
Owned · Operated · Managed by Californians

IF IT'S DONE WITH HEAT, YOU CAN DO IT BETTER WITH GAS

A NEW BLUE STAR

TESTING LABORATORY · A·G·A · APPROVED

In the A. G. A. Firmament!

PROUDLY this new gas heater wears the Blue Star—emblem of approval by A. G. A. Testing Laboratories.

Proudly it bears the name, Heatrola—without question the best-known name in the field of Warm-Air Heating.

An immediate widening of the field for gas heating has been caused by the introduction of this new appliance, designed to heat three to five rooms by circulating moist, warm air.

Hundreds of companies have ordered samples—many are already actively campaigning.

Estate Gas Heatrola will be exhibited at Chicago. See "It"—in Space 31, basement. Better still, order a sample now.

THE ESTATE STOVE COMPANY — *House Founded in 1845*—Hamilton, Ohio

Estate GAS HEATROLA

There is only *One* Heatrola -- *Estate* builds it

A Long Life — *and a merry one!*

You sell a long life of comfort, satisfaction and uninterrupted service when you write "Hotzone" on the sales ticket.

The profit on the sale remains *profit*. The nibble, nibble, nibble of frequent service is a thing of the past when you specialize on the Hotzone.

The Welsbach design and construction, which has made the Hotzone so popular with Gas Companies, has been accomplished without making the price prohibitive. With all its quality, the price has been held down so that it meets the mass pocket-book. That is the key to Hotzone's success.

Write for portfolio and prices on the Hotzone.

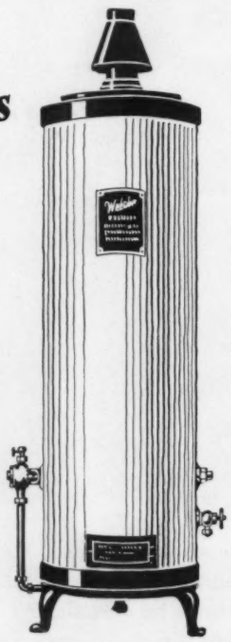
for better complexions

for prettier hair

for softer hands

for greater health

for cleaner clothes



for easier shaving

for less work

for economy

for more leisure

for all emergencies

WELSBACH COMPANY, GLOUCESTER CITY, N. J.
Offices in principal cities

Member Pacific Coast Gas Association
Member American Gas Association

Welsbach HOTZONE

SELF-ACTION GAS WATER HEATER

Welsbach Hotzones bear the A. G. A. Blue Star of approval

Made in four sizes: Fifteen, Twenty, Thirty and Forty-five Gallons. Welsbach Company, Gloucester City, New Jersey. Offices in Principal Cities.

WELSBACH COMPANY, 863-865 Mission Street San Francisco, Cal.

Send me your portfolio on Hotzone Self-Action Gas Water Heaters.

Name .....

Address .....

.....

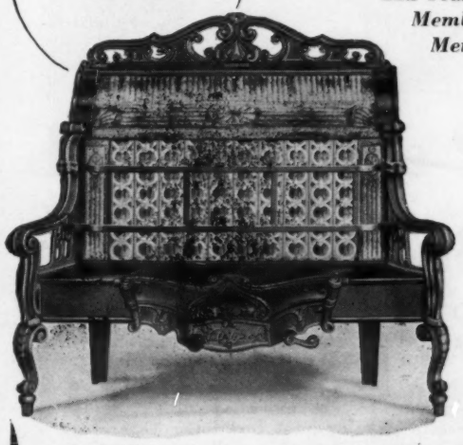
3 Headliners IN THE Star Cast of the Welsbach "MILLION DOLIAR BURNER"

Price, appearance and performance

—Here in the Welsbach line is the greatest combination of these three important points. The famous Welsbach burner assures a flexibility that is essential to gas companies.

Unusual efficiency is maintained under all conditions. In addition every Welsbach gas heater is packed with selling appeal. Each one carries a price tag that amazes the shopper with its reasonable cost. In appearance, nothing finer was ever offered.

$25



No. 47—Ten glowers. Finish: Silvered Brown. Columns beautifully tinted. Size: 23 inches high, 24 inches wide, 11½ inches deep.

WELSBACH COMPANY
San Francisco Office, 863-865 Mission Street
Member Pacific Coast Gas Association
Member American Gas Association

$31.50

No. 49—Twelve glowers. Finish: Silvered Brown. Columns beautifully tinted. Size: 23 inches high, 28 inches wide, 11½ inches deep.

$16.50

No. 51—Seven glowers. Finish: Silvered Brown. Columns beautifully tinted. Size: 23 inches high, 20¼ inches wide, 11½ inches deep.

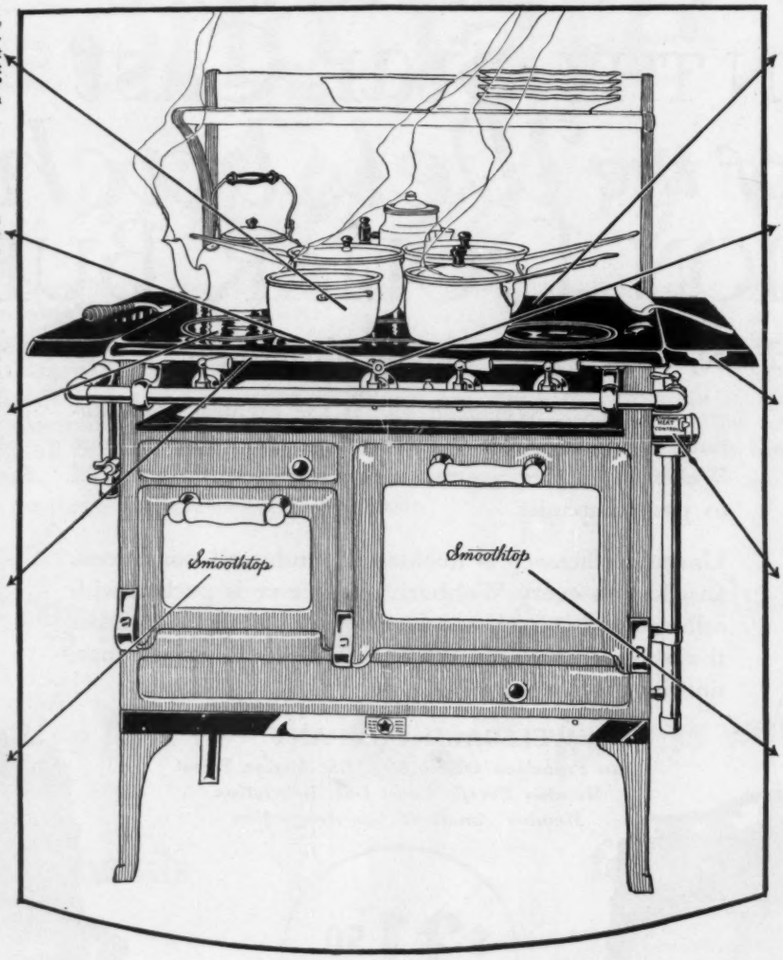
a. Top capacity 50% more than ordinary cabinet ranges — yet SMOOTHTOP takes less kitchen space.

b. One burner cooks four vessels or keeps a whole dinner hot.

c. Smooth, enclosed top is easy to keep clean and prevents vessels from blackening. Lids can be removed for fast cooking.

d. Convenient table height. No bending or stooping. Adds to kitchen's attractiveness.

e. Quick, efficient and economical Broiler. Generous capacity.



f. Top holds 6 or 8 vessels without crowding. Always a place to keep things warm without danger of burning.

g. Quick boiling, gentle boiling, simmering and warming, etc., all from one burner at one time.

h. Aluminum cooking chart on end shelf. Always at finger tips—cannot be lost.

i. Dependable, trouble proof Heat Regulator that assures perfect baking results.

j. The famous Vulcan oven known for its wonderful baking qualities. Moist, warm air evenly distributed.

Smoothtop--A Proven Business Getter

The experience of scores of customers proves that SMOOTHTOP will get business when no other range will. Here are some SMOOTHTOP sales features that make sales come easier—and faster.

1—You will find it easier to sell the woman who has an old style range because SMOOTHTOP is so obvious an improvement over any other range.

2—Small kitchens, so popular today, will no longer be a problem to you. SMOOTHTOP has the cooking capacity of a large range, but takes only about one-half the space.

3—Its distinctive, smart appearance attracts attention wherever shown, making it a remarkable "leader."

4—It will help you to get more apartment house and real estate development business. Operators use it as a talking point when selling or renting. Incidently, it makes possible smaller kitchens.

5—Your dollars and cents volume and profits will be greater because it appeals so strongly to women that they will buy it in preference to a cheaper range.

6—Our merchandising service has proven of great help in interesting women in SMOOTHTOPS.

Let us tell you of instances where SMOOTHTOP is building sales for others and how it will do so for you.

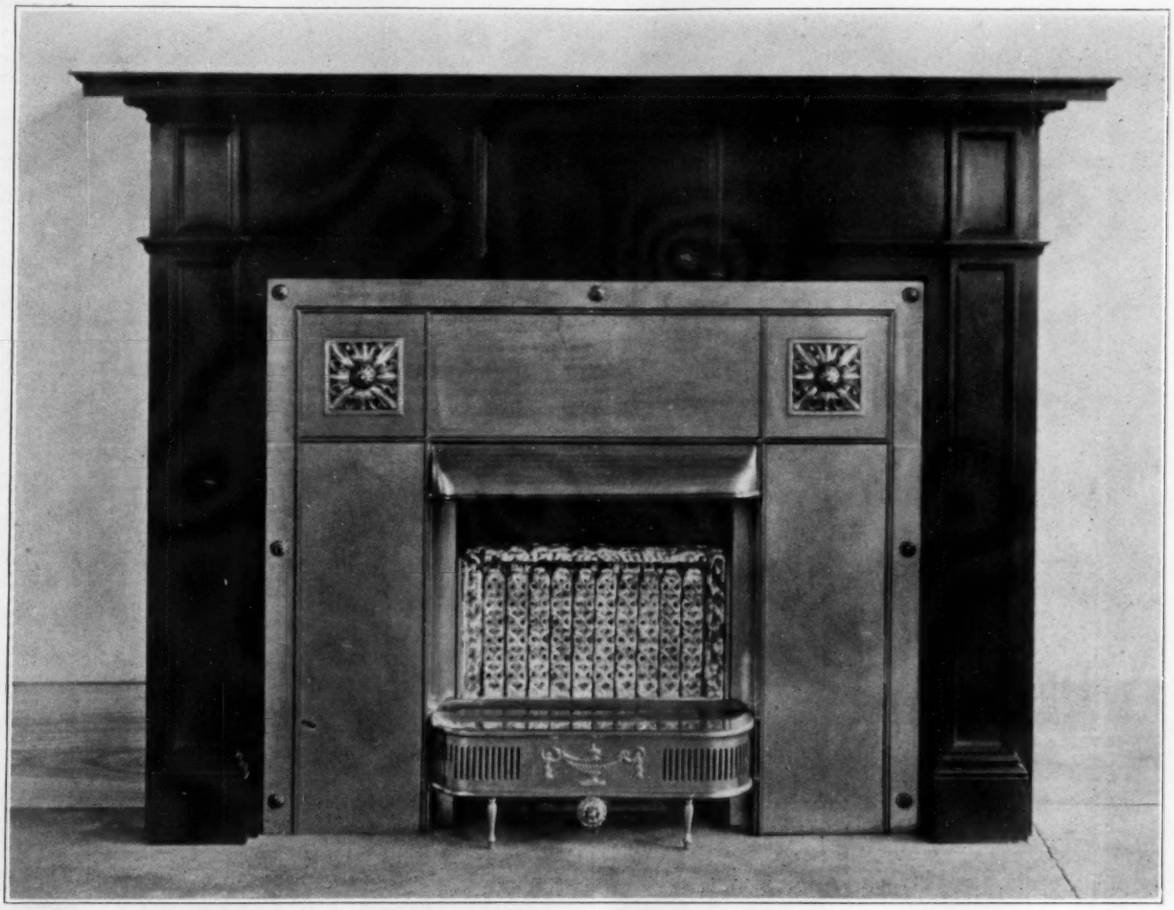
Northwest Gas & Electric Equipment Co.

Pacific Coast Distributors,
Standard Gas Equipment Corporation

372 Pittock Block, Portland, Oregon.

180 New Montgomery St., San Francisco, Calif.

164 So. Central Ave. Los Angeles, Calif.



Every Home Should Have a Fireplace

There is an unusual sales opportunity offered you in this Humphrey product. A fireplace makes any home more cheerful . . . more inviting . . . and now any home owner may install one at low cost. The Humphrey Radiantfire-Mantel is easy to install—requires no skilled labor—no tile setting—and eliminates that expensive chimney and ash pit construction typical of the old fashioned fireplace. These exclusive, practical advantages appeal to an ever-increasing number of home owners . . . and substantial sales will reward the dealer featuring this product.

The Humphrey Radiantfire, paneling and hood, are of genuine stainless steel with an armor bright finish that looks like finely chased silver—a finish that will always stay beautiful. The wood mantel which encloses it is of the finest cabinet work.

The Humphrey Radiantfire Mantel

No. 500—Finish—3 coats flat white, list price.....$118
No. 501—Finish—mahogany, list price $125
F. O. B. San Francisco

The
HUMPHREY
Radiantfire

TESTING LABORATORY · AGA · APPROVED

TRADE MARK REG. U S PAT OFF

Manufactured by
General Gas Light Co.
Kalamazoo, Mich.

Pacific Coast Manager
C. B. Babcock
135 Bluxome St.,
San Francisco

JEWEL STOVES AND FURNACES — DETROIT STOVE WORKS — LARGEST STOVE PLANT IN THE WORLD

JEWETT

MAGEE

Monarch MALLEABLE

YORK ABENDROTH

ERIEZ

STOVES SUMMIT RANGES FURNACES — COMBINATION COAL AND GAS RANGES

PEERLESS

T TAPPAN

SPARK

RED CROSS RANGES & FURNACES

Crawford Gas Ranges

ANDES

Paramount MALLEABLE

WHERE is the woman who does not yearn for the conveniences afforded by a gas range equipped with a modern oven heat control? She simply doesn't exist.

Think of the merchandising possibilities here and then follow the history of the Wilcolator which is today the standard oven heat control on over 90 makes of gas ranges.

Wilcolator on your gas range is a sales asset that builds increasing good will with years of service.

Ask us to send you Bulletin No. 204 for details.

The Wilcolator Company
17-23 Nevada Street, Newark, N. J.

W I L C O L A T O R

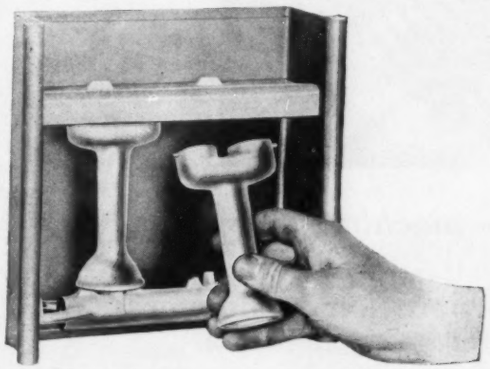
OVEN HEAT CONTROL

Now is the Time To Sell This New *Improved* Radiant Heater

NOW you can have greater efficiency, distinctive beauty and lower heat costs in this new improved radiant heater.

Pacific, concentrating on the burner—the heart of any heater—has developed a remarkable, easily removable new type that is fool-proof and needs no adjustment.

Lint and dust, which impair the efficiency of most heaters, are easily eliminated from the Pacific burner without the need of an expert or even tools. The burner can be removed and cleaned in a moment's time. The flame can therefore be kept glowing steadily and efficiently year in and year out.



Several beautiful models—one to suit Spanish, Colonial, Italian and all other decorative schemes.

Send for folder or see display at 1740 W. Washington

Pacific Gas Radiator Company

Gas Heating Headquarters

Roseberry and Walter Streets, Huntington Park, California

Los Angeles Agency
Pacific Gas Heating Company
1732-40 W. Washington St.
BEacon 2190

Gas-Steam Radiators

Unit Basement Furnace Systems

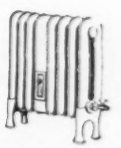
Dual Pipeless Furnaces

Fireplace Radiant Heaters

Recess Radiant Wall Heaters

Automatic Storage Hot Water Heaters

Pipeless Floor Furnaces



Gas Radiators—Pressed Metal and Cast Iron

Agencies Throughout the West

DISPLAY AT METROPOLITAN BUILDING MATERIAL EXHIBIT

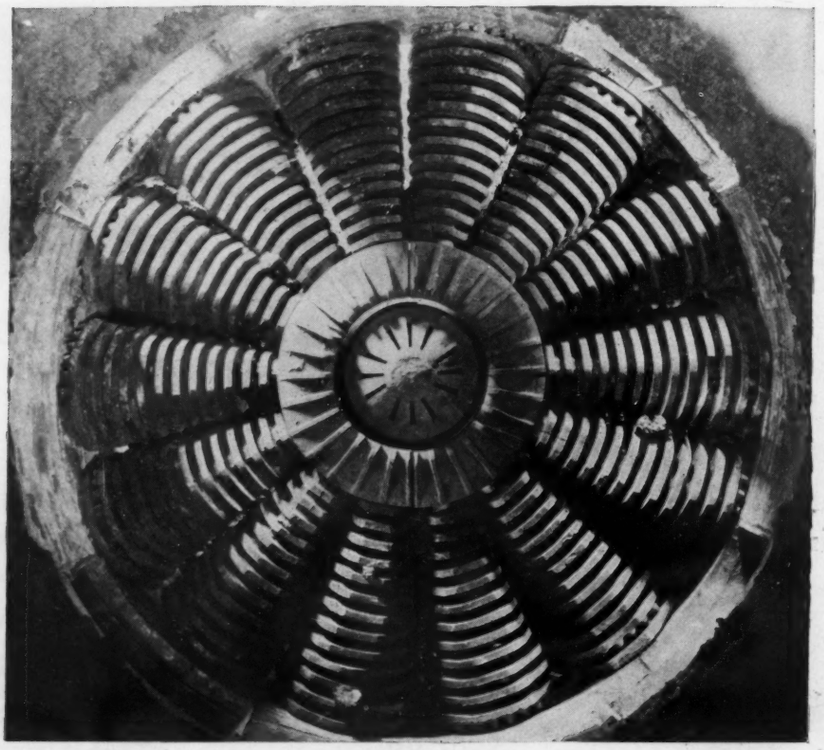
Call for a Pacific Heating Engineer

MANUFACTURERS of EVERY TYPE of GAS HEATING APPLIANCE

All Vented for Healthful Heat

Daily Clinkering Eliminated

The Steere Automatic Grate for Water Gas Machines



Continuous operation of water gas machines has been achieved.

The Semet-Solvay Engineering Corporation announces the Steere Automatic Grate for water gas generators.

Intermittent revolving grate action mechanically removes the ash and clinker broken up by the Grate Poker. No clinker accumulates over the grate, thus keeping the entire fire bed clean and open.

Operation of the Steere Automatic Grate is hydraulic. Design is simple and construction sturdy. It opens the way for new production records in water gas output.

The Grate is made up of rotating, conical-shaped segments. It can be installed on any water gas generator.

SEMET-SOLVAY
ENGINEERING CORPORATION
Division Allied Chemical and Dye Corp.
40 RECTOR ST. NEW YORK

WESTERN GAS

A Monthly Journal of the Gas, Gas Appliance and Natural Gasoline Industries in *Western America*

A United Industry Will Convene *at* Chicago, October 10 *to* 14

WHEN a great industry meets in national convention to review a year of highly organized Association effort and to get renewed vision for another period of service, the proceedings of the convention body must be as many-sided as the industry itself. If the important work preliminary to a national conference has been well done the program offered delegates will represent the best thought of the industry, spoken by its leaders, and presented so effectively that the representatives who are present will return home with "the will to do."

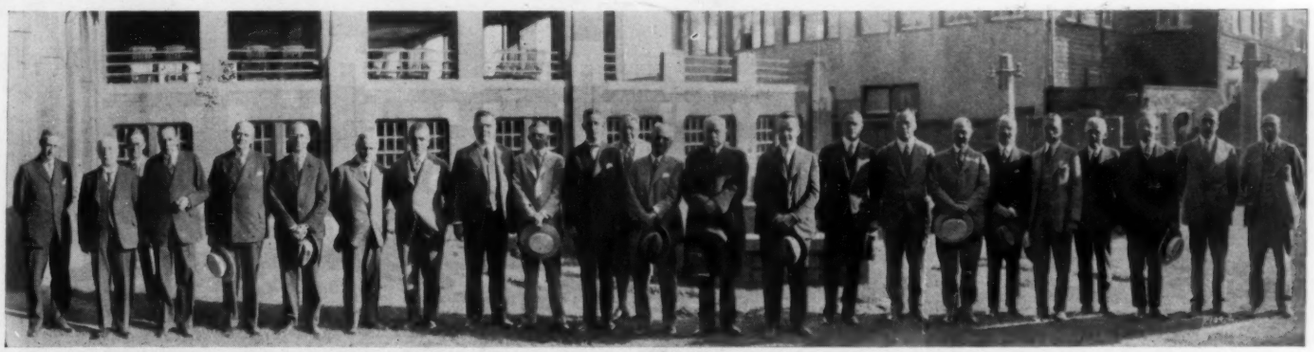
A great industry is to convene in annual session this month at Chicago. From every section of the United States, and from other nations as well, will come gas men who have at heart the advancement of their industry. And it is only necessary to scan the program for the American Gas Association's ninth annual sessions to have proof that the essential advance work has been indeed well done. A. B. Macbeth, president, Alexander Forward, managing director, those of Headquarters staff and others who have co-operated in the arrangements for this most significant of all A.G.A. conventions, are to be heartily congratulated upon the imposing array of worth-while features which comprise the 1927 program.

President Macbeth on another page of this issue has pointed out that this year's convention compels the Western gas man's attention to a more marked degree than ever before. With the convention site centrally located, and with the natural gas branch of the industry now part and parcel of the A. G. A. family, those who attend the October meetings should form an exact cross section of our united industry.

Below will be found the program details, including the features which make up general session, sectional, and special department programs.

A number of this year's features are new to A. G. A. conventions. A formal place on the program has been given to women of the industry in a special session on Thursday morning, October 13, in addition to an extensive program of the home service committee on Tuesday afternoon. There will be a special industrial gas sales conference, on Monday evening, October 10, in addition to the customary full program of the Industrial Gas Section. Of unusual interest to industrial gas men will be the industrial inspection trips to various installations in the Chicago district. Arrangements for this convention feature are in the hands of D. W. Chapman of the Peoples Gas Light & Coke Company. A new note in the Technical

(Continued on Page 47)



The American Gas Association Executive Board, photographed at a recent session at Atlantic City. From left to right, the members are: Alexander Forward, Arthur Hewitt, K. R. Boyes, Chas A. Munroe, R. M. Leach, G. W. Parker, R. B. Brown, C. E. Paige, B. J. Mullaney, J. J. Burns, F. A. Lemke, C. D. Jackson, P. H. Gadsden, Geo. B. Cortelyou, A. L. Tossell, A. B. Macbeth, W. C. Beckjord, W. E. Steinwedell, J. B. Klump, T. R. Beal, H. C. Clark, Alfred Hurlburt, O. H. Fogg, H. O. Loebell

A. B. MACBETH, 1926-27 PRESIDENT OF THE AMERICAN GAS ASSOCIATION AND EXECUTIVE VICE-PRESIDENT OF THE SOUTHERN CALIFORNIA AND MIDWAY GAS COMPANIES, LOS ANGELES, CALIFORNIA.

Gas—Today *and* Tomorrow

By A. B. MACBETH
*President, American Gas Association**

AN event of distinct significance in the industrial and economic history of America will take place when the Ninth Annual Convention of the American Gas Association is called to order in Chicago on October 11. This gathering will bring together in one place and at one time, and for the first time, representatives of all elements of the gas industry in North America. It was only two months ago that the Natural Gas Association of America was merged with the American Gas Association, and this convention thus becomes the first complete session of the gas industry on this continent.

The selection of Chicago as a meeting place this year has been good news for the gas men in the western and coast states. The last western convention of the national organization was held in Chicago in 1921, a year when the gas industry was facing the most serious problems in its history. The convention this year finds the industry in a prosperous condition, ready to press on to greater usefulness and to extend its operations in fields where great opportunities for increased sales are known to exist.

TO CONSIDER VITAL PROBLEMS

I dare say that never before has the gas industry been asked to attend a convention quite as important and full of promise as the Chicago meeting this year. We will meet not only to congratulate ourselves on the progress that has been made but, more important than that, to solve some of the larger problems that go with success. The gas industry has long ago dropped its swaddling clothes and is now face to face with many problems of a vital nature, some of which are common to other industries of comparable size. I have only to mention rates, house-heating, refrigeration, large-volume hot water service, national advertising and a national sales policy, long distance transmission, Laboratory-approved appliances and many almost revolutionary developments in the manufacturing end, to convince anyone that the Chicago meeting will be one of unusual interest and value to the gas men.

Aside from our manufacturing methods and our policy of merchandising appliances, the Western gas man is part and parcel of the family of gas men and the big problems of the day affect him as well as his fellow workers situated in different parts of the country. Indeed, the gas industry has entirely lost its sectionalism so far as its problems and future opportunities are concerned. Our problems are common to all gas men and the program of the American Gas Association is a national program, calling for the active interest and support of every gas man, without regard to geography or any other supposed limitation.

The convention this year makes it possible for the companies on the Pacific Coast and in the Northwest to send larger delegations of men than was possible with previous meetings held at Atlantic City. Furthermore, the Chicago meeting by reason of its location is bound to take on a western flavor, and this is all to the benefit of the man on the Pacific Coast who may not have attended a national meeting the last two or three years.

Today there are two major fields for the gas industry's expansion. These two, househeating and industrial heating, are the industry's normal and most suitable tasks, and concentration upon their development could well be the most important endeavor in which gas men can engage during the next few years.

Notwithstanding the gains already made and reflected in increased sales during the past ten years, it is probable that the gas industry is carrying less than 10 per cent of the total industrial load available, and possibly a much smaller percentage of the househeating business. The past development of these two uses for gas, and the stability of the domestic load,—that of cooking, waterheating, refrigeration and incineration,—are responsible for the secure position of the industry today.

In the househeating field, the gas industry has its most powerful ally in the public itself. A public burdened with periodic coal strikes and fluctuating prices for fuel oil, and weary of the job of tending furnaces and removing ashes, is only too anxious to pay the slight additional cost for the conveniences of automatic gas heating. The American love of comfort and convenience has been, and will continue to be, instrumental in winning the househeating business.

Five years ago the manufacturer of gas-fired house-heating appliances concentrated in the natural gas territories; now he sells much of his output in the manufactured gas sections. House-heating is becoming an increasingly important factor of every gas company's business, and this ultra-modern method of heating seems destined to repeat America's experience with other innovations. The electric light and the automobile were not cheaper than the then known means of light and transportation, but they won out for other reasons, just as gas heating will win out as the home owner realizes its convenience and utility.

SIXTY PER CENT FAVOR GAS

A recent national survey of gas customers, conducted by the American Gas Association, reveals the significant fact that six people out of every ten prefer to heat their homes with gas, while four favor oil.

Merely figuring two per cent of the present gas customers as prospects for gas heating within the next few years would mean an added consumption of 110 billion cubic feet of gas, or an increase of approximately one-quarter the present sales.

The seasonal character of house-heating entails peak load conditions that must be overcome. The development of off-peak industrial business, much the same as is now handled by natural gas companies, with the shut-off privilege, has proved feasible. In many communities the gas industry will unquestionably be able to serve a large portion of this business, assuming that the rate structure is properly devised.

The application of gas to innumerable processes of industry opens a field of practically unlimited proportions. Today the American Gas Association is spending $500,000 on scientific research to develop suitable equipment for many of industry's heat problems that have been troublesome for years. In 1910 only five per cent of the total output of gas was sold to industry, or seven and one-half billion cubic feet. In 1926 twenty-five per cent of the gas sold was for this purpose, representing an increase of 1500 per cent over 1910.

The outlook for the future is reflected in gas company securities today, and in the responsible place the gas

(*Continued on Page 72*)

*A. B. Macbeth is Executive Vice-President of the Southern California and Midway Gas Companies, with headquarters at Los Angeles, Calif.

L. M. KLAUBER, GENERAL SUPERINTENDENT OF THE SAN DIEGO CONSOLIDATED GAS AND ELECTRIC COMPANY, THE NEWLY-ELECTED HEAD OF THE PACIFIC COAST GAS ASSOCIATION FOR 1927-1928

34th Annual Convention *on* Pacific Coast Sets High Standard

FOR the thirty-fourth time the Pacific Coast Gas Association, oldest of the gas associations, met in yearly session, this year at Santa Cruz, Calif., convention dates being September 12 to 16. Hotel Casa del Rey proved an admirable headquarters for the 333 convention members, and the committee on convention arrangements headed by Chairman Morris F. Wales did an efficient job in every particular.

In many respects the Santa Cruz convention was a red letter occasion among conventions—and P.C.G.A. meetings are always noteworthy. Never before has there been such a varied and excellent program of general sessions, as in this past convention. There was a general session on each of the four business days of the five-day conference, one of the sessions being a joint meeting of the Commercial and Public Relations Sections.

Space does not permit reviewing the many excellent addresses, which covered the larger aspects of our industry in a thoroughly comprehensive way. President W. S. Yard in his address at the opening session of Monday, September 12, led his listeners over a brief survey of the course of gas service on the Pacific Coast, from the beginning of service in San Francisco some 73 years ago, down through the formation of the Pacific Coast Gas Association in 1893, and on to the problems of utilization, sales, production, personnel, etc., which concern the industry of the present.

An executive session following the addresses of Monday afternoon resulted in the election of the Association's new administration, headed by President L. M. Klauber whose statement relative to the new year appears on this page. The complete election results were as follows:

President, L. M. Klauber, San Diego Consolidated Gas and Electric Company.

Vice-President, Charles H. Dickey, San Francisco.

Treasurer, D. G. Martin, San Francisco.

Executive Secretary, Clifford Johnstone (re-elected).

Newly-elected directors were: R. E. Fisher, San Francisco; C. R. Miller, Portland; N. R. McKee, Los Angeles; Morris F. Wales, San Francisco.

Directors serving for the second year are: C. W. Platt, Portland Gas and Coke Company; W. C. Hornberger, Central Arizona Light & Power Company; O. L. Moore, Los Angeles Gas and Electric Corporation; W. Van Zandt, C. B. Babcock Company. Retiring-president W. S. Yard also becomes a member of the directorate for the ensuing year.

Another important item of convention business was the recommendation in the last general session of Friday, September 16, of a uniform pressure base in the measurement of natural gas through orifice meters. This recommendation was couched in the following words:

"Whereas there are now in use in the Natural Gas Industry on the Pacific Coast widely varying pressure bases for the measurement of natural gas through orifice meters, and whereas this practice is due to the general adoption of barometric pressure at the point of measurement as a datum, and whereas this practice has no physical justification and whereas it has caused unnecessary confusion and distortion of records of gas measured through orifice meters:

"Now therefore be it resolved by the Pacific Coast Gas Association that it hereby recommends to the member companies of this association and others jointly involved with them in gas measurement that a uniform total pressure base of 14.73 lbs. per sq. inch be adopted and used hereafter for all measurement of gas where correction is made for pressure."

The resolutions committee was made up of Henry Bostwick, chairman; F. J. Schafer and W. M. Thompson.

Definite appointment of two Section chairmen for the new year has already been made, H. L. Masser, Los Angeles Gas and Electric Corporation succeeding R. M. McCalley as general chairman of the Technical Section, and D. L. Scott, also of the L. A. G. and E., being named to succeed himself as head of the Public Relations Section. Successors to E. N. Simmons and C. M. Grow, who efficiently led the Accounting and Commercial Sections last year, have yet to be chosen.

Other features of the general sessions, deserving of special comment were the addresses on Tuesday by A. B. Macbeth, president of the American Gas Association, and R. M. Conner, director of the A.G.A. Testing Laboratory at Cleveland. On another page of this issue will be found the text of Mr. Conner's address, presenting in some detail the A.G.A. Laboratory program and outlining the Blue Star Sales Stimulation Plan. President Macbeth in this same issue gives *Western Gas* readers another

(*Continued on Page 64*)

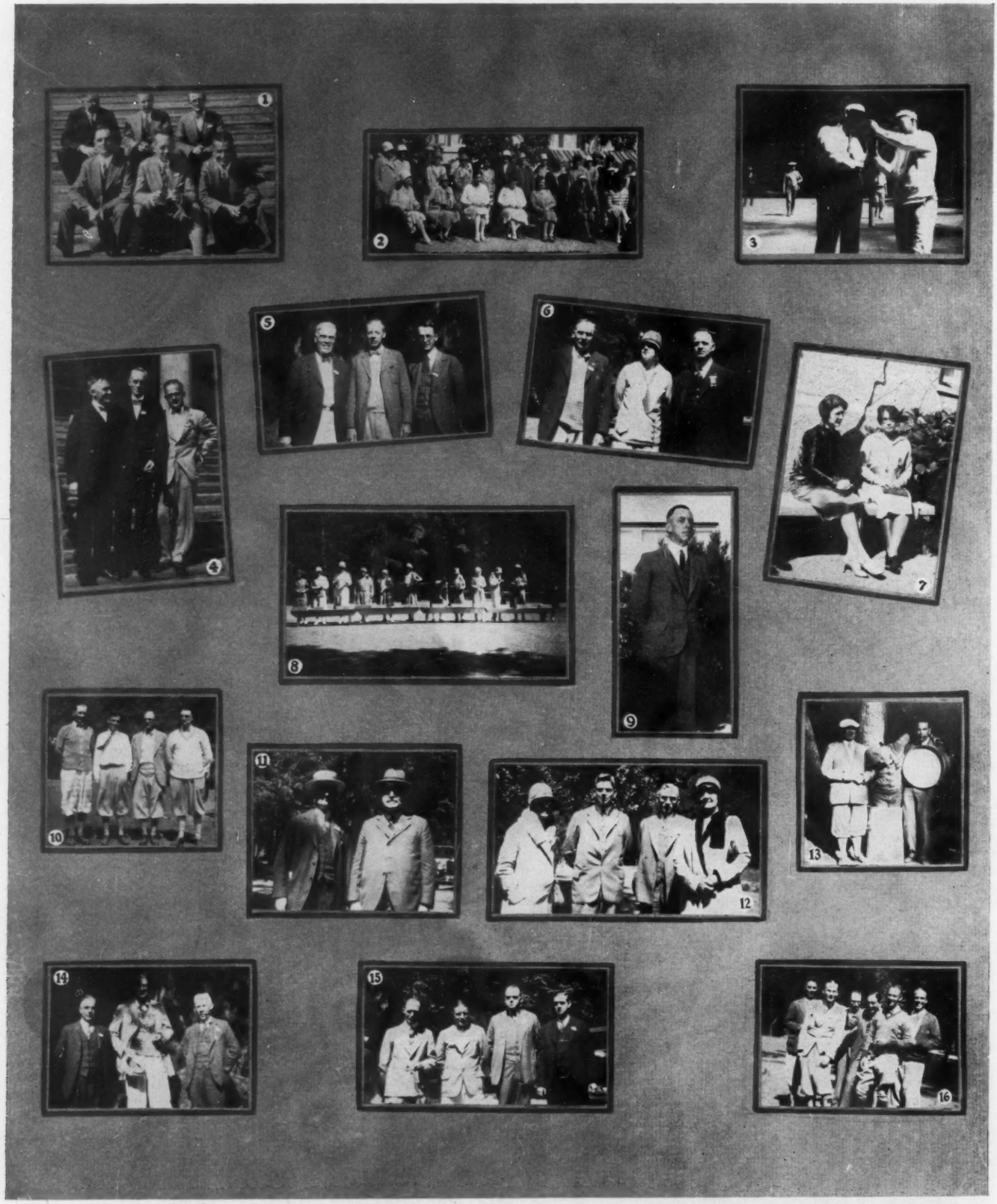
Beginning Another P. C. G. A. Year

THE Pacific Coast Gas Association has behind it a long record of useful activity in the gas field. The Association has kept pace with the gas industry in growth and efficiency and has had a considerable share in the development of the industry.

The coming year will see no radical changes in Association affairs. The four Sections (Public Relations, Commercial, Technical and Accounting) with their many sub-committees will continue to investigate and report upon a wide variety of subjects. This section or committee work is the means whereby the Association is continuously active and is therefore a most important phase of the annual program. The Association has long since ceased to revolve entirely about a single annual convention, but through these committee activities and the three regional meetings, the constructive work progresses continuously through the year. Through such committee work men in every branch of the industry have an opportunity of exchanging ideas with those engaged in similar activities for other companies, with the result that they may profit at an early date from new methods and discoveries.

The Executive Secretary of the Association stands ready to offer the results of his experience and skill to section and committee chairmen in carrying forward this important feature of Association work. It is to be hoped that company executives will in the future as in the past, realizing the importance of the committee work to their companies and to the individuals who participate in such work, lend their company's aid to a rapid and complete formation of the committee organizations.

L. M. Klauber,
President, Pacific Coast Gas Association.



Seen at the Pacific Coast Gas Association Convention, Santa Cruz—Left to Right: 1. Top Row: Frank Mosher, H. M. Crawford, F. U. Naylor; Bottom row: J. Earl Jones, John H. Hartog, Wm. L. Hoyt. 2. Some of the Ladies of the Convention. 3. Geo. S. Campbell and Ed. Florence in the preliminaries to the North vs. South baseball classic staged at the Convention Barbecue. 4. W. C. Hornberger, E. S. Jones, H. Elliott Taylor, 5. "Tom" Leary, "Charlie" Babcock, and "Cliff" Johnstone. 6. J. D. Kuster, Mrs. Kuster, Morris F. Wales. 7. Mrs. J. D. Kuster, Mrs. Henry Bostwick. 8. The Nail-Driving Contest at the Big Trees. 9. E. A. Angley. 10. R. M. Conner, George H. Finley, C. D. Weiss, R. M. McCalley. 11. S. Waldo Coleman, John Martin. 12. Mr. and Mrs. L. M. Klauber, and Mr. and Mrs. W. F. Raber. 13. Survivors of the Barbecue: J. L. Stone, Jas. F. Pollard, H. E. Seagraves. 14. Robert H. Hargreaves, W. M. Thompson, Edward T. Floyd. 15. J. H. Hill, W. F. Rockwell, James W. Moncrief, Chas W. Stevens. 16. W. Van Zandt, W. D. Dickey, Carl Summers, Jay Jenkins, John O. Wiley, Herbert G. Day

The Ideal Behind *the* Blue Seal *of* Approval

By R. M. CONNER
Director, Testing Laboratory
American Gas Association

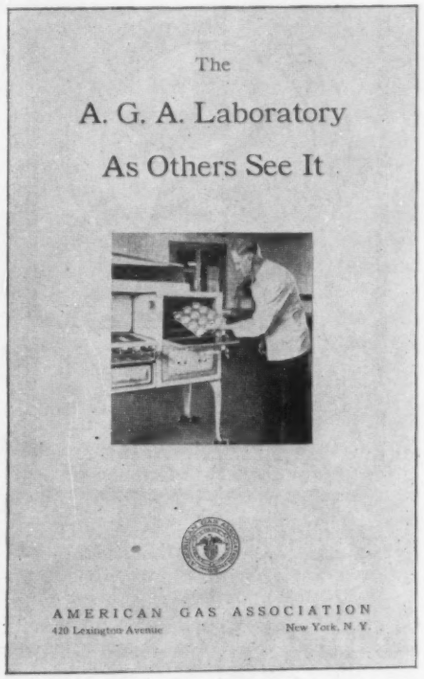
¶ Mr. Conner delivered the address printed on these pages at the Tuesday afternoon general session of Septemper 13, the Pacific Coast Gas Association's annual convention. In it he discusses the work of the National Testing Laboratory, outlines the Blue Star Sales Stimulation Plan, and also touches upon such basic activities as the research on mixed gases now under way at the laboratory.

AFTER an absence of nearly three years, it is indeed a great pleasure to again be afforded the opportunity of appearing on your Convention program. Our President has extended you the greetings of the American Gas Association. However, I will add that I consider it a great privilege and a compliment to our Testing Laboratory to be given the opportunity of appearing before so many of my old friends on the program of the Association of which I am still a member. Still further, I am again fortunate in having been asked to discuss a subject that for many years has been of marked interest to your membership. As evidence of your support of the general plan, I recall very distinctly listening to the report of a special committee headed by your Mr. H. M. Crawford, delivered in Santa Barbara three years ago this fall. His conclusions, after a careful survey of the entire situation, were that your Association should support the national body in carrying out its program for the establishment of a central testing agency to serve the entire gas industry of America.

A good many developments have taken place since that time. In fact, in slightly more than two years the American Gas Association has completed the financial arrangements necessary for the establishment of such an institution and expended roughly $200,000 for this purpose, which when added to the investments made by supporting appliance manufacturers, will total approximately a half million dollars.

LOCATION'S ADVANTAGES

The Testing Laboratory was founded in Cleveland, Ohio, principally because so many different kinds of base gases are available there, which makes it possible to duplicate the gas service conditions existing in almost any city in the United States. In addition to this fact, it is a large gas appliance manufacturing center, and is rather centrally located, when taking into consideration all the different classes of appliance manufacturers. Another very important factor influencing its present location was the splendid facilities donated by the East Ohio Gas Company. Their generosity and wholehearted support have played a most important part in bringing about a realization of whatever degree of success our institution has attained.



The cover to an interesting A. G. A. pamphlet recently published.

Since its establishment in Cleveland, Ohio, on June 1, 1925, the American Gas Association, Inc., Testing Laboratory has examined and approved from inspection or test, 16 types of flexible gas tubing, 5700 gas ranges, 325 space heaters, 37 water heaters, and 4 central house heating appliances, making in all 6066 different types of tubing and appliances as of September first of this year. This is, indeed, a very imposing list and certainly sufficiently complete for the types of appliances represented, for any gas company or dealer to base their merchandising policies on.

With the active support of representatives of the former Natural Gas Association, The American Society of Mechanical Engineers, American Society of Heating & Ventilating Engineers, American Engineering Standards Committee, Master Plumbers' Association, U. S. Bureau of Mines, U. S. Bureau of Standards and the U. S. Public Health Service, test requirements for flexible gas tubing, ranges, space heaters, water heaters and central house heating appliances, have been completed by the Association, and tentative requirements for the installation of domestic gas appliances have been distributed for criticism. With this array of talent assisting our various appliance committees, it is only logical to assume that their work would be immediately accepted, and enjoy the unqualified support of the entire gas industry. The recent action of the Canadian Gas Association in adopting the A.G.A. Approval Requirements and accepting its Laboratory's findings is evidence of this fact, and now makes our test codes standard for the entire North American Continent.

P. C. G. A. IS WELL REPRESENTED

Appliance manufacturers and gas company members of the Pacific Coast Gas Association are well represented on all of our appliance committees. On the Gas Range Committee, we have Messrs. Graham, Secy.-Treas. of the James Graham Mfg. Company, Newark, Calif. and H. M. Crawford, General Sales Manager, Pacific Gas & Electric Company, San Francisco. On the Space Heater Committee, Mr. H. L. Masser, Gas Engineer of the Los Angeles Gas & Electric Corporation; on the Water Heater Committee, Messrs, F. H. Bivens, General Agent, Southern Counties Gas Company, E. S. Hoyt, Jr., President, Hoyt Heater Company, and C. R. Miller, Supt. of Utilization, Portland Gas & Coke Company. On the Central House Heating Committee we find Mr. C. B. Babcock, President and

General Manager of C. B. Babcock Company, Mr. F. M. Banks, Sales Supervisor of the Southern California Gas Company, T. M. Foulk, Engineer, Public Service Company of Colorado, E. L. Hall, General Supt. of the Portland Gas & Coke Company, and E. L. Payne, General Manager of the Payne Furnace & Supply Company, Inc. Your Association is also well represented on the Appliance Installation Committee by C. R. Miller, chairman of the committee which prepared your Gas Appliance Installation and Service Manual. In other words, out of a total of 48 sub-committee-men, 12 men or 25 per cent are from the Pacific Coast. In addition to this fact, Mr. E. L. Hall, Chairman of your Appliance Information Committee, is also a member of the General Requirements Committee of the American Gas Association.

Not being entirely familiar with our approval standards, some of our customers and a number of our people have misinterpreted their meaning. To begin with there are minimum requirements that every appliance to which they apply should meet. What is more significant, they refer largely to the quality of performance and particularly its relationship to efficiency and safety, rather than how an appliance shall be built. Our standards do insure reasonably durable construction but they positively do not specify what kind, or how many accessories should be attached to an appliance, nor do we make any effort to classify approved appliances in order of their merit. To do so would certainly react to the disadvantage of the large majority of manufacturers and probably result in endless controversies. Almost every manufacturer is sincere in the belief that he produces the best appliance on the market. For some testing agency to publish the fact that his appliance was only a D or C grade product would, undoubtedly, make him decidedly antagonistic.

NO COMPARATIVE STANDARDS SET

It would be very difficult in the gas business to establish comparative standards. Our present plan insures safe and efficient gas appliance operation. To attempt to influence the customer's selection other than to suggest that he buy an appliance bearing a Blue Star would seem at the present time to be going a great deal too far. Certainly, we wish the purchaser to select the very best equipment he can afford, and, generally speaking, we believe he will do so. Modern convenience features such as warming closets, enameled oven linings, glass doors, oven heat regulators, and other such features to which our standards apply but which are not made mandatory, should possess sufficient merit to justify their added cost.

I regret that many more of your local appliance manufacturers have not seen fit to co-operate in our national gas appliance testing program, notwithstanding repeated requests on our part. Every manufacturer of whom we have record has been solicited from two to six times. Coming as I do originally from the Pacific Coast regions and having in mind at all times the best interests of the gas business, I have felt this situation rather keenly. Various excuses have been offered, characteristic among which are the cost of the tests, and the distance which separates your locality and the Testing Laboratory. It is a matter of record that our test fees are more reasonable than any other concern that has ever submitted estimates on the cost of conducting similar tests. This seems only logical when one takes into consideration the fact that supporting gas companies are meeting all such expenditures as are necessary in the purchase and installation of new equipment, depreciation, and all research work incident to the preparation of approval requirements. While the distance from here to Cleveland is great, it is not so far in excess of that from such sections as Alabama, Texas and various parts of Canada from which we receive many appliances for test. Our factory inspection service also eliminates any unnecessary freight or testing bills.

The Testing Laboratory was established as a public necessity. Supporting it we have not only the interested governmental agencies, but a tremendous moral obligation on our part to safeguard not only the future of our business, but the interests of our customers to the best of our ability. Being fundamentally right in its purposes it is sure to succeed, and manufacturers who are not cooperating with it are not only missing the opportunity to advance the best interests of our industry but are jeopardizing their own business futures as well.

A number of agencies have made surveys of the industry during the past few years and all of them indicate that, generally speaking, the greatest market for the sale of gas in the future will be through the sale of additional appliances to our present customers, rather than by the addition of new domestic consumers. This means that we must set up our sales activities to insure that new homes are adequately equipped with gas equipment and that additional appliances are sold to our present customers.

THE BLUE STAR SALES PLAN

Our big competition in the sale of these additional appliances is not solely with competing fuels such as wood, oil, coal and electricity. Equally important are other products desiring to increase the comfort of the home with which we must also compete for our rightful portion of the housewive's time and attention and for our share of the dollar she is spending. In meeting this variety of competition, the Blue Star Sales Plan of the Association presents the need for offering our product and service in a newer and more interesting and attractive manner by establishing an entirely new standard of gas service for greater home comfort and by trade marking and featuring this service thereafter locally and nationally.

Coming as it did, simultaneously with the establishment of the Testing Laboratory, the first purpose of the Blue Star Plan is to create a public acceptance of the fact that gas burning equipment should be constructed in accordance with certain standards based on minimum requirements for safety, durability and efficiency to insure that the product "Gas" may be utilized to best advantage in creating greater comfort in the modern home. In other words, the first purpose of the Blue Star Plan is to induce the public to purchase nothing but A. G. A. Approved appliances and, in turn, to urge all gas companies and dealers to sell nothing else.

The second purpose of the Blue Star Plan is to increase the sale of gas by promoting the construction of completely equipped gas homes, bringing about the sale of additional appliances to present customers through increasing their consumption, turning unprofitable

(*Continued on Page 68*)

THE BASIS OF THE BLUE STAR PLAN

THE SIGN OF A MODERN HOME
THIS HOME EQUIPPED FOR
MODERN GAS SERVICE
AMERICAN GAS ASSOCIATION
THE BLUE STAR SIGN
CERTIFIES
That ample provision have been made herein for modern gas service to meet the standards of comfort and convenience of the Blue Star Home as established in this community, and—
That all gas service facilities and equipment installed will comply with the efficiency, reliability, and performance requirements of the Blue Star Home as established by the American Gas Association and
Sponsored By
HOME GAS COMPANY
Greater Comfort and Convenience

Above is a reproduction of advertising designed for use of local gas companies as a tie-in with the Blue Star program.

A Progress Report *on the* First Year *of* A.G.A. Industrial Research

National Committee's Efforts Are Achieving Practical Success

By C. W. BERGHOM
Secretary, Industrial Gas Section, American Gas Association

THE first year of activity of the American Gas Association's Committee on Industrial Gas Research is ended. The function of the Committee is to advise and supervise the work of industrial research for which a fund of $100,000 per year for five years has been underwritten.

THE PROBLEMS TO BE MET

Two problems confronted the Committee at the beginning:

1. In what industries shall the research be carried on (obviously all could not be undertaken at once)?

2. What agencies shall be created or used to carry on the work?

The first question was answered by a survey carried on in fifteen different cities that gave the answer in which industries our great potential opportunities exist.

The answer to the second question became obvious when the survey was completed. Only manufacturers of industrial equipment with a research and engineering organization and numerous contacts among the industrial plants of the country could carry on this work.

The survey and tabulations of the potential market for gas was therefore sent to all the manufacturers of industrial equipment with a request that they analyze the potential opportunities and present a plan of procedure for research to create the equipment to secure this load.

The Committee interviewed the principals of most of the industrial gas equipment manufacturing companies and selected two concerns, The Surface Combustion Company and The National Machine Works, as being best qualified to initiate the work.

THE MOST LUCRATIVE FIELDS

The survey showed that the activities will be most remunerative in the fields of forging, heat treating, baking, non-ferrous metal melting and heat treating, also the development of a radiant heat burner to be used in the above and other heat applications. The Committee decided therefore to dedicate the first year to the problems in the above industry and heat processes.

To produce equipment that will be of value to the gas industry we must consider and embody the best technique of the industry that will use the product, we must employ the best gas utilization technique in order to secure the greatest value from our fuel; we also must embody the practical shop requirements of a working machine.

To co-ordinate the technical requirements of industry with the combustion technique as well as the practical embodiment in a machine, requires the coordination of three agencies with three different viewpoints, the combustion engineer, the industrial research chemist or physicist and the production shop. This requirement the Committee feels has been satisfactorily created and the best talent employed using the following relationship.

The contractural arrangements with the manufacturers of industrial gas equipment were supplemented by underwriting research fellowships in the American Baking Institute and University of Michigan. These two fellows work in cooperation with the research engineer of The Surface Combustion Company. The contact with industrial plants is made in the most feasible manner presented. In that way we get the necessary coordination of all agencies needed for best results.

ACCOMPLISHMENTS TO DATE

The actual research was not undertaken until the allocation of proper objective, the organization of research staff and the practical solution of the problem of relationship, finance, etc. It is functioning smoothly now and should be conducive to quicker results from now on.

For the period just closed it can report the following progress:

A. The completion of tests at the Baking Institute showing the fundamental requirements of a gas baking oven.

The second step of procedure in this division is to build an oven that will embody the advance knowledge secured from these and other tests.

B. The development of a high temperature conversion system that makes possible higher efficiencies, which equipment has already been embodied in a brass melting furnace now in process of being tested in a production plant and on which preliminary tests show satisfactory advantage over old methods. The embodiment of a radiant system of combustion in varnish boiling shows a remarkable increase in efficiency, namely, an increase of 85 per cent over the best systems used in the past.

NON-FERROUS METALS

C. The development, design and construction of a testing unit for the heat treatment of non-ferrous metals that should give us an answer on how to heat non-ferrous metals direct with higher gas economies than at present.

D. Design of rotary bolt heading forge furnace automatic in operation and on which labor saving can be credited to the fuel.

Outlines of tests necessary for the proper development of three types of forging units and many other studies which are the basis of future work.

The work for the balance of the year 1927 covers the same divisions.

The Committee feels that the progress made up to date is most encouraging and that the set-up for the remainder of this year shows comprehensive procedure with reasonable assurance of practical success.

TO EMPLOY CONTACT MAN

The committee has decided upon the employment of a contact man to facilitate the work of giving more frequently and more completely the information on progress and activity of the Research Committee and to keep in touch generally with the needs of the industry and their most probable solution.

Blower and set of burners for two tunnel kilns

Firing Roofing Tile

PART IV *of a* Ceramics Series

By LEE HOLTZ
Southern California Gas Company

MANY changes in our manner of life have taken place in the past few years due to the elevated standards of living. Education, athletics in the schools and outdoor sports, along with the development in methods of transportation, improvement in city streets, county highways and park systems, have, without a doubt, been the leading factors in encouraging out-of-door life.

This being a day of extensive display, the nation as a whole has arrived at a point where the attitude is to build homes that express individuality. Every effort is made to build one home a little different from others.

There was a time when more thought was given to the comforts, (along with beauty) to the interior of the home, but now with a greater share of time being spent out-of-doors, the same thought for pleasing surroundings has been directed toward exteriors. This, in turn, has made the building and landscape architects realize more fully the possibilities which the ceramic industries have to offer in the way of artistic exterior clay wares.

Aside from face brick and terra cotta, roofing tile is perhaps at present the most extensively used exterior clay product. There are so many patterns of roofing tile that it is impossible here to enter into a detailed description of them. However, of the various patterns, those which interlock are considered from a practical standpoint to make the most satisfactory roof. Almost any color desired can be obtained and many roofs are laid in variegated color schemes which are quite striking.

Roofing tiles are made by the stiff mud process. There are still a few hand shaping plants which make a very beautiful as well as serviceable tile. The drying is done in the atmosphere and the burning in the old style field kiln.

In the most modern process today, the shaping is done by a steel die which is quite intricate in its design. The construction of the die depends upon the clay body to be used. If the die is not properly designed to suit the clay body, laminations in the finished tile are quite apt to occur. In other words, if the die is not properly designed the inner or center portion of the green tile as it passes through the die has a tendency to move faster than the outer portion, due to friction, and the finished tile may have the appearance of being built up in layers or of being veneered. This statement is more or less exaggerated, but it is intended to emphasize the extreme care which must be taken by the clay manufacturer with his dies.

Lee Holtz

The most familiar types of kilns used today are the "Clamp," "Down Draft," and most recently, the "Direct Fire Car Tunnel Kiln." As the "Clamp" and "Down Draft" kilns have been described in a previous number, a description of a successfully operated "Harrop Car Tunnel" kiln as used by the Los Angeles plant of Gladding-McBean and Company will be given.

The kiln proper has a length of 324 feet 11½ inches, a tunnel width of 4 feet 10 inches, and an available setting height from car top to spring of arch of 4 feet 11 inches.

KILN CAPACITY

The kiln holds 52 cars, inclusive of one car in the charging vestibule. Each car weighs 3,610 pounds and carries a double deck or bench superstructure weighing 2,450 pounds. The superstructure consists of fire clay slabs 3 inches in thickness supported by fire clay posts 6 inches by 6 inches in size. The setting space on the car top and each deck measures 5 feet 10 inches long and 4 feet 4 inches wide. Each car has a capacity of 766 pieces of roof tile or 2.3 tons of finished material.

An oil gear pusher requiring some 18,000 pounds pressure is used to move the train of cars, weighing 554,320 pounds, through the kiln.

Along the firing zone of the kiln are ten furnaces, five on each side, equipped with Maxon Premix low pressure gas burners. The premix burner consists of a motor driven blower with means for proportioning the air and gas supply at the inlet of the blower. The air and gas are mechanically mixed with the blower and the mixture is driven to the nozzle where complete combustion is secured. The gas port is easily adjusted to suit either manufactured or natural gas.

The gas is delivered to each motor blower at 8 oz. pressure and about 1.5 oz. pressure is maintained at the burner nozzle. The burner ports in each furnace are approximately one-half inch larger in diameter than the burner nozzles. There are two reasons for this manner of construction; the first one

Kiln cars loaded with roof tile and ready to enter kiln

being that, for maximum fuel economy, as much secondary air as possible must be excluded; and, second, the small amount of secondary air allowed to leak in around the burner tips has a tendency to keep the metal cool and protect it from burning off.

The premix blower has four functions, viz: it feeds a given amount of air into the mixing chamber; it thoroughly mixes the air and fuel; it drives the mixture of air and fuel into the furnace and prevents back firing by maintaining a sufficient and constant pressure.

Perhaps one of the most important features of a premix burning system is the unit application to furnace, each furnace being a complete unit depending only on a central electric and gas supply for its operation; and additional furnace capacity may be added with no additional plant requirement except the premix unit.

SPECIAL FEATURES OF KILN

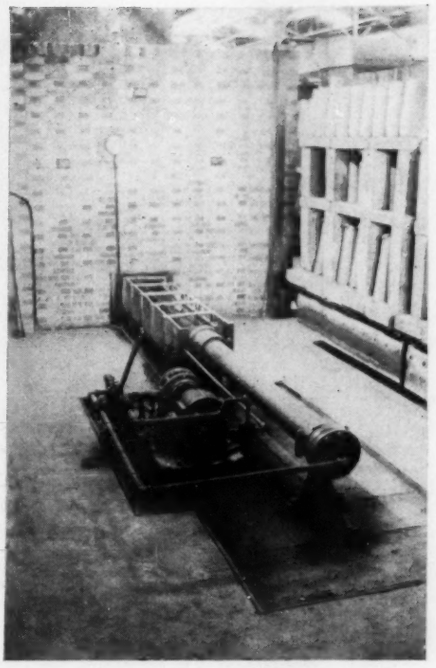
Among the many special features of the kiln are the watersmoking device and two oxidation furnaces. The latter are located one on each side of the kiln midway between the charging end and firing zone.

The kiln is located at right angles to the tunnels of a waste heat drier, and, by means of turntables, the cars of dried ware are placed upon a track which closely parallels the kiln car return track. The operation of setting is thereby made direct from the drier car to the tunnel car.

At the present rate of production and operation one car is removed and one car is placed in the kiln every 65 minutes. On the 65 minute schedule, a car passes through the kiln in 56 hours and 20 minutes. Of this time, approximately 22 hours are required for watersmoking and oxidation, 8 hours for actual firing and soaking, and the remainder for cooling.

In its passage through the kiln, the ware reaches a maximum temperature of 1820° F. A continuous record of temperature is kept by a recording pyrometer, the thermo couples being placed in the crown of the kiln. In addition to this, pyrometic cones are used on the car top and an 04 cone is brought down at the maximum temperature.

Characteristic of this design of car tunnel kiln, the bottom exhibits a tendency to become hotter than the top. This condition is easily corrected by adjusting the burner nozzles slightly upward. However, the present market demand in California is for a variation in color; therefore, it is quite profitable to burn the bottom harder than the top.



Car pusher

It has been found best to draw the ware from the kiln at a temperature of approximately 400° F., and, in order to cool it to a handling temperature and keep pace with the unloading, a cool air blast from a portable fan is turned upon the ware soon after it is removed from the kiln.

With one handling the cooled ware is unloaded from the kiln car, sorted, graded, and stacked upon trailers and removed by small gasoline trucks to the storage yard.

In the way of comparison, it is quite interesting to note that with an average output of 2.3 tons of burned tile per car, the 65 minute schedule produces 51.60 tons per day or 1548 tons per 30-day month, which is practically equal to the average monthly production of ten 30-foot round, down draft kilns with a total of 1660 tons. Twenty-five hundred cu. ft. of 1100 B.t.u. natural gas is consumed in the tunnel kiln per ton of fired ware as against 7,000 cu. ft. per ton in a 30-foot round, down draft kiln. This is a direct fuel saving of 64.2 per cent.

Setting the kiln cars requires 2.14 labor hours per ton of burned ware while the setting of a 30-foot round, down draft kiln requires 3.02 labor hours per ton. Drawing or unloading the kiln cars requires 1.06 labor hours per ton while drawing a 30-foot round, down draft kiln requires 1.96 labor hours per ton. The labor saving in setting and unloading is 29.2 per cent and 45.8 per cent respectively.

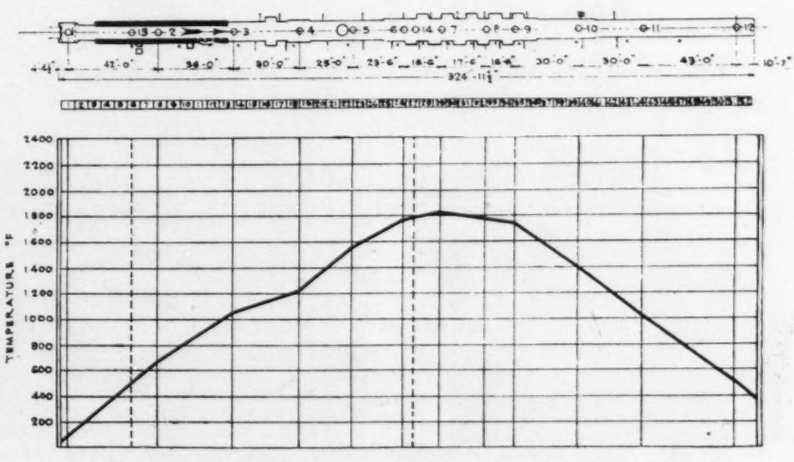
The electric power required by the kiln includes a 15 H.P. draft fan motor, a 15 H.P. pressure fan motor, ten ½-H.P. burner motors and a pusher motor of ¾ H.P., or a total of 35¾ H.P.

The quality of the ware produced will average, by the month, around 94 per cent of number one ware.

After several months operation, the kiln was shut down for inspection and found to be in excellent condition. There were no cracks in the brick work, showing that the expansion joints had functioned perfectly.

It is quite evident that the tunnel cars and continuous kilns will replace many kilns of other types as the problem of heat economy in the ceramic industries is being more thoroughly considered.

From the gas company point of view, the tunnel kilns can be considered ideal gas burning equipment. With the proper low pressure regulator installed and the initial tuning necessary at the start, the kiln should function continuously without interruption.



Temperature record, burning roof tile in direct fired car tunnel kiln

Correction: On Page 25 of the August issue, in Mr. Holtz' article on "Firing Face Brick" a change in phraseology should be noted. Speaking of the disadvantages of forcing the burner, (at the end of the first paragraph, center column) the phrase, "reducing the pressure within the kiln" should read, "causing a reducing atmosphere within the kiln."

Holder Station Design

By ARTHUR F. BRIDGE

THE following report embodies the result of a study of some of the economic factors which govern the design of district holder stations.

From analysis of the graphs and tables presented, certain conclusions have been derived which are believed to be rather independent of local conditions and therefore of general interest.

Considered broadly, this subject presents several problems or questions, which we have endeavored to answer for the general case.

Among the problems which are encountered by the engineer designing a gas project are the following:

1. Under what conditions are outlying or district holder stations justified?

2. What type of storage is the most economical?

3. Assuming low pressure storage is selected, what motive power should be used for compressor drive?

Discussing these questions in the order named:

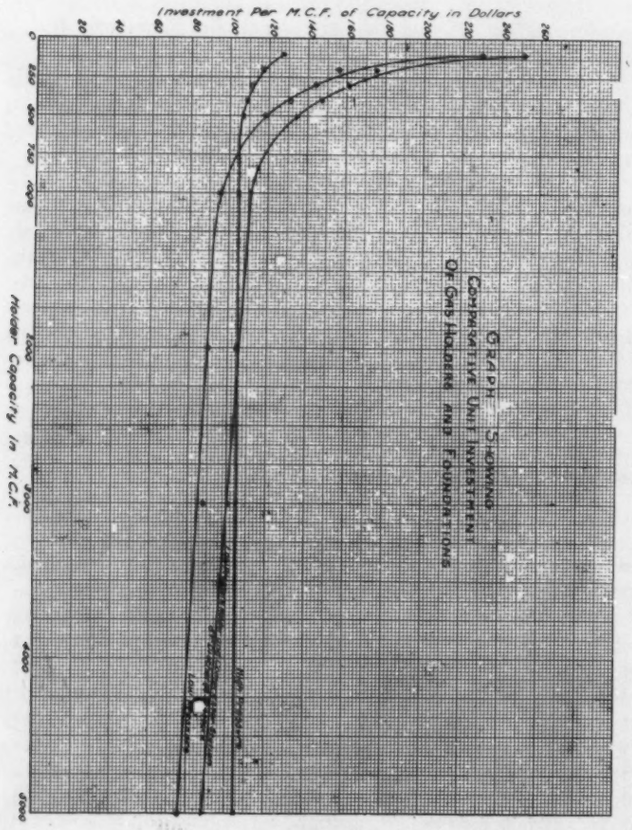
1. Storage located at the generating station or other source of supply serves to equate the load on these facilities only, as distinguished from outlying storage at the distribution center, which performs the additional function of equalizing load on, and thus increasing effective capacity of compressors and transmission and distribution mains. This being the case, why is it not the established practice to provide a holder at the terminus of every trunk line? The answer is obviously that subdivision of storage of the low pressure type is usually accompanied by increases in investment and labor. The first results from the higher unit costs of small holders, and the second is due to attendance costs at additional stations. An exception to this rule is the case where the load on the line is of such magnitude as to permit the employment of large holders. Under these conditions everything favors the installation of the district holder.

If the load requires less than say 300 M.C.F. of storage, the great difference in unit cost of low pressure holders of this size as compared with those of greater capacity renders their use in district stations uneconomical, unless the distribution center is located several miles from the source. This relation is shown

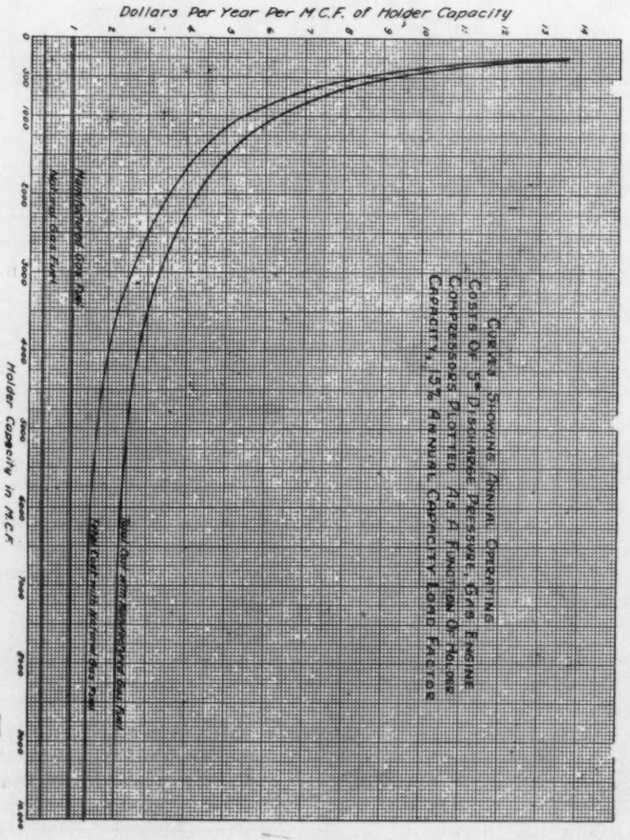
Arthur F. Bridge

¶Mr. Bridge is executive engineer for the Southern Counties Gas Co., Los Angeles, Calif., and served as chairman of the Pacific Coast Gas Association's Committee on Holder Location and Maintenance, for the past year. The report published on these pages was given before the Technical Section of the P. C. G. A. during the convention in September.

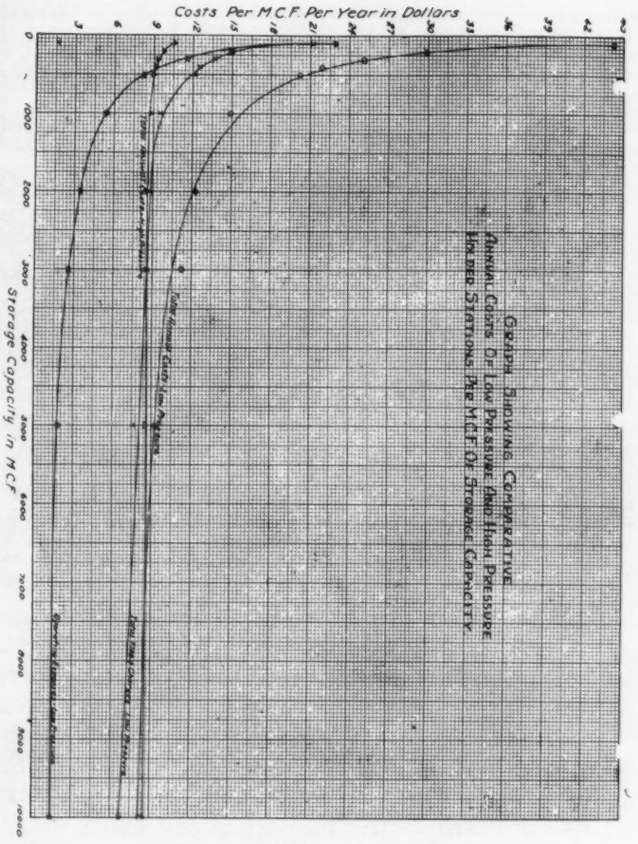
Together with M. R. Thompson, chief engineer for the Southern Counties Gas Company, Mr. Bridge has been responsible for the design of a number of highly efficient high pressure district holders on that company's system.


Investment Per M.C.F. of Capacity in Dollars
Holder Capacity in M.C.F.
Graph Showing
Comparative Unit Investment
Of Gas Holders And Foundations

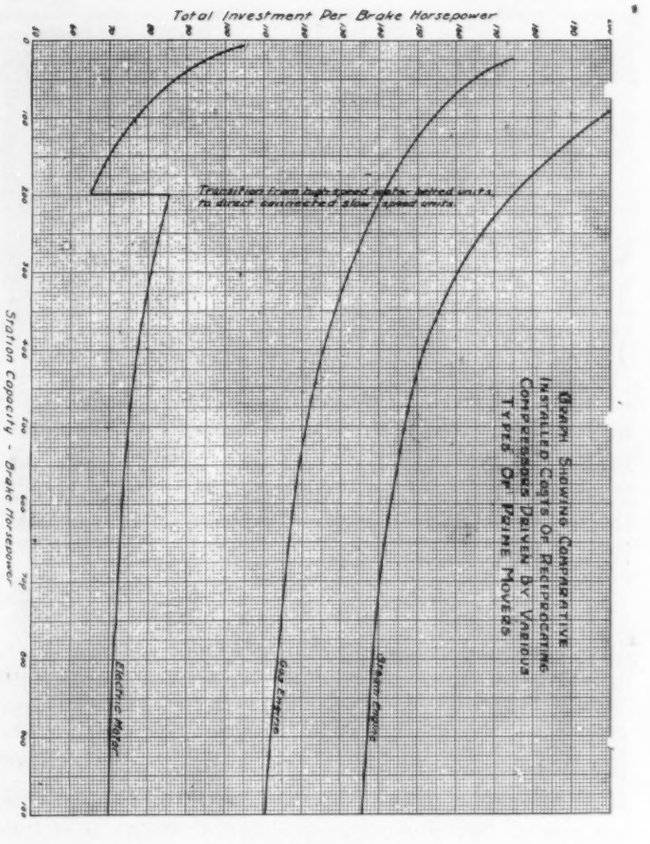
(Fig. 1)


Dollars Per Year Per M.C.F. of Holder Capacity
Holder Capacity in M.C.F.
Curves Showing Annual Operating
Costs Of 5" Discharge Pressure, Gas Engine
Compressors Plotted As A Function Of Holder
Capacity, 15% Annual Capacity Load Factor

(Fig. 2)


Costs Per M C F. Per Year in Dollars
Storage Capacity in M C F
Graph Showing Comparative Annual Costs Of Low Pressure And High Pressure Holder Stations Per M.C.F. Of Storage Capacity

(Fig. 3)


Total Investment Per Brake Horsepower
Station Capacity - Brake Horsepower
Graph Showing Comparative Installed Costs Of Reciprocating Compressors Driven By Various Types Of Prime Movers
Electric Motor
Gas Engine
Steam Engine

(Fig. 4)

in Table IV (Page 54) and in Figure 1.

Thus for instance the total annual costs for five 200,000 cu. ft. low pressure holder stations (including cost of boosting to 5 pounds) would be approximately $30,000 as contrasted with a corresponding figure of $15,000 for one 1,000,000 cu. ft. station.

To illustrate further, assume a system with a peak day sendout of 5,000 M.C.F. and therefore requiring a total storage capacity of about 1,000 M. to equalize load. Assume that the consumption is divided 4,000 M. and 1,000 M. between two communities or load centers, immediately adjacent to the generating station and two miles distant respectively. Considering low pressure storage only for the moment, should the storage be concentrated at the source or part of it located at the distant market? Analysis of many records of peak day sendout discloses that the peak hour approximates two times the average hour. Without terminal storage, therefore, we must double the capacity of the pipeline and compressors feeding it.

The comparative costs of the two alternate arrangements are shown in Table I on Page 52.

Considering next the economics of pressure storage in relation to compressor and pipe line costs, we find conditions much more favorable to the use of district holders, even in rather small units. This is due to two factors—the relatively low unit cost of small holders of this type, and the elimination of attendance and fuel costs.

Examination of the figures in the second column of the foregoing table shows that the design with 200 M. high pressure district holder yields approximately the same costs as concentrated storage even where the length of transmission line is only two miles. At a distance of five miles it offers substantial economies. At somewhat greater distances the installation of terminal high pressure storage is justified for the sole purpose of reducing transmission cost and regardless of its value in equating load on generating plant or other primary source. Surprising as it may seem it is clearly demonstrated by the computations in Table III (Page 53). Thus at 20 miles its use results in a reduction of transmission costs amounting to 7.5 per cent, at 34 miles 11 per cent, and at 80 miles 25 per cent.

This conclusion might be criticised on the ground that the results are due to the selection of pipe diameters and initial pressures rather than the use of terminal storage. However, this is not the case. Thus, for instance, if the 6-inch line in Case 2 were operated at the same annual load factor as the 8-inch, or 40 per cent without storage, the total annual costs become $71,835 for one half the annual delivery, or 20.50c per M., as compared with 15.43c per M. for the 8-inch line.

We may therefore properly conclude that for the load factor range prevailing for companies supplying a domestic and commercial market, district holders are an economic necessity where the distance from source to market exceeds five miles. Paradoxically, however, with very long transmission lines of large diameter, operating at high initial pressures, terminal storage assumes less importance because of the relative increase in available line pack.

2. Taking up next the type of storage which will produce the lowest annual costs per unit of capacity.

There are available two general types, namely the low pressure, in which the gas is stored at a pressure of 2 inches to 10 inches, and the high pressure or receiver type in which pressures of 30 pounds to 75 pounds are employed.

To determine the cost relation of these types when utilized as district holders, tables have been prepared showing a comparison of investment, fixed charges and operating costs over a range of sizes from 100 M. to 10,000 M.

Table IV (Page 54) and the chart in Fig. 1 show investment per M.C.F. of net storage capacity for holders and foundations. These costs are as of today

(Continued on Page 52)

EDITORIAL

Come to Chicago!

SESSIONS of the American Gas Association at Chicago this month take on a Western flavor which is gratifying to members of the West's sturdy industry. In the bringing of the A. G. A. convention to a central location, and in the fact that a Western executive heads the national organization's administration, Western men see recognition for the advances made on their sector of the gas battle front. The interest shown in A. G. A. proceedings at Chicago will be proportionately great.

Yet after all, it is easy to overdo this matter of sectionalism. There is only one gas industry, and its problems are essentially the same wherever gas is being served to home and industry. It will be an inspiring spectacle to see the entire industry—natural gas men and manufactured alike—gathered in common convention for the first time. A broad program has been prepared for the occasion, and none will leave Chicago disappointed.

The A. G. A. Laboratory—An Achievement

LESS than two years ago—to be exact, on October 31, 1925, with the initial tests on gas tubing, the Testing Laboratory at Cleveland began its perilous task of reducing the gas appliance business of the nation to a state of order. To say that it was a task to stagger the most optimistic well-wisher of the Laboratory is putting it mildly. It is still a task in which only beginnings have been made. But the beginnings are truly amazing!

It is estimated that in the year 1928 Blue Star ranges will constitute 75 per cent of all the ranges sold east of the Rockies, that 60 per cent of the space heater sales in the same territory will be Blue Star—and likewise 50 per cent of the water heaters.

The factor of distance, separating Western manufacturers and gas companies from the Laboratory, as yet makes the record a trifle less impressive in the West—but still impressive. Over half the ranges, a good percentage of the heaters, and probably 50 per cent of the furnaces sold in the West in 1928 will bear the Blue Star, in the opinion of those closely in touch with the Laboratory program.

For a two-year record this surpasses what the gas industry might in reason have expected. And the utilities are just beginning to glimpse the ultimate Blue Star sales possibilities.

When gas companies the country over make their influence felt for Laboratory approved appliances nothing can stand in the way of the full realization of the vision which lay in the minds of the Laboratory's founders.

Wanted: Two Billions in New Money

ONE of the gas industry's leaders, Harry C. Abell, president of the National Power and Light Company, and former president of the American Gas Association, in a recent statement offers his opinion that manufactured gas companies will require two billion dollars in new money for expansion in the next ten years. His estimate is not founded on visionary optimism, but on the conservative ground that the industry is carrying less than ten per cent of the available industrial load, and a considerably smaller share of the house-heating load.

How will the industry meet this unquestioned need for financing the coming era of gas service? It seems certain, for one thing, that customer ownership will extend its wholesome influence. Companies will become even more than at present a part of the public they serve.

Natural Gas Conservation

SENTIMENT for natural gas conservation seems to be shaping more definitely than ever before, stimulated by the present overproduction of oil, which in some sections has been accompanied by unusual gas wastage. There are several commendable examples of co-operative action among oil operators to conserve gas. It is probably no less than just to say that the use of the gas lift as an agency for maximum oil recovery is influencing the situation. Also producers must reckon with the American's awakening national consciousness of having squandered much of his priceless heritage of natural resources.

Sell, the Year Round, but Use the Seasons!

IN Thanksgiving and the Christmas season the gas new business department sees an opportunity for special selling of gas appliances. October is the month to whip the campaigns into shape. Window displays and adequate publicity must supplement the direct selling.

J. C. Carmody
Executive Secretary
and Treasurer

H. W. Beekman
Chairman, Pacific
Service Assn.

Pacific Service Employees Association

By J. C. CARMODY

NO agency has done more to stimulate efficiency and company *esprit de corps* than has the company employees' organization. The editors of *Western Gas* feel, therefore, that the following detailed account of Pacific Service Employees Association, which is recruited from the ranks of Pacific Gas and Electric Company workers, will be of real benefit as well as of more than passing interest to gas utility readers.

THE Pacific Service Employees Association was organized January 1, 1917, with a membership of 334. With this as a nucleus, the membership steadily grew until the peak was reached in 1926, dues from 8,121 members being received during that year.

Membership dues are $3.00 per year, and to the amount so received, the Pacific Gas and Electric Company adds a generous contribution, sufficient to meet the difference between the amount received from dues and the amount actually required to carry on the activities of the Association.

All regular employees of the Company, its leased, operated, or subsidiary companies are eligible to membership, and while we solicit employees, great care is taken that no coercion be used in obtaining members.

ASSOCIATION'S PURPOSES

Primarily, the Association was formed for the purpose of promoting, advancing, and maintaining a spirit of fraternity and comradship among its members, and advancing their interests by means of beneficial, educational, social and recreational activities.

Two meetings were held monthly, one in San Francisco, and one in Oakland, and largely due to this fact the Association appealed, practically, only to those adjacent to the Bay Region. The meetings were semi-technical in character and the program usually consisted of a talk on a subject pertaining to some branch of the Company's activities, a general discussion on the matter, and a short entertainment. Prominent speakers were invited to address the members, and every effort was made to offer such a diversified program that all would be interested.

Interest grew to such an extent that it became necessary to reorganize in order to provide for those who, due to distance, found it impossible to attend the meetings held in the Bay Region. In 1921, twelve Local Sections, corresponding geographically to the Company's twelve Divisions, were formed, and are today functioning, each Section with its own set of officers, consisting of Chaircan, Vice-Chairman, Secretary and Treasurer, and each Section more or less self-governing.

In addition to electing their own officers, the members of each Section elect two delegates to a convention held for the purpose of electing a Member of the Employees' Welfare Committee of the Company.

Four Sections constitute what is called a Region and each Region is entitled to elect one member to the Welfare Committee. The Association is represented on the Welfare Committee by the Chairman and Junior Past-Chairman of the Association.

The officers of the Association are Chairman, Vice-Chairman, Secretary and Treasurer, all of whom are elected by the members for a term of one year. In addition to electing the officers, the members elect eight members of the Executive Committee, four being elected each year for a term of two years. The officers, the eight elected members, the Chairman Ex-Officio, and the twelve Local Section Chairmen form the Executive Committee which is the governing body of the Association.

In addition to the organization, purposes, growth and personnel of the Association, a description of its activities will, in all probability, be of interest.

Upon the Benefit and Loan Committee devolves the duty of visiting our sick, seeing that they are being properly cared for, and assisting them in any manner possible. Courtesies, such as fruit, flowers, etc., are extended the sick and particular attention paid those who, unable to receive the necessary treatment at home, are forced to come to one of the larger cities, such as San Francisco, for treatment.

Quite often it is found that an individual's recovery is being retarded by worry caused by financial difficulties or other matters. Very often these matters can be and are attended to by us, and with the source of worry removed the recovery of the individual is expedited.

DEATH BENEFITS

The Association pays to the dependents of deceased members a Death Benefit of $300, $400, or, $500, the amount depending upon the number of years the deceased was a member of the Association. In the absence of actual dependents, or where it appears no provision has been made for the payment of funeral and burial expenses of the deceased, the Association will expend on account of funeral and burial expenses an amount not exceeding the sum that would have been paid to any known dependents. In many instances, in the absence of dependents or relatives, it has been necessary for the Benefit and Loan Committee to take entire charge of the funeral and burial.

No benefits are paid, either to dependents or for funeral or burial expenses, if the death of the member imposes upon the Pacific Gas and Electric Company a legal obligation or duty to make compensation for such death.

It is the duty of the Benefit and Loan Committee to keep more or less in touch with the families of our deceased members, particularly with those families left in circumstances not of the best. This

(Continued on Page 62)

Economical Preheater Installation *in* Natural Gas Gasoline Plants

By EUGENE TAYS

General Superintendent
Cienaga Corporation

ONE of the steps in the process of extracting gasoline from natural gas is heating the absorption oil up to the required temperature at which the stripper will completely denude the oil of its gasoline content. After the oil leaves the heat interchangers, this is accomplished by means of preheaters which may be either of the direct fire or the steam type. The construction of both types varies considerably, each having its advantages and disadvantages.

In the past few years natural gasoline manufacturers have more or less adopted the use of the steam preheater. This type not only costs less to manufacture and install but it requires less space, can be installed in any position in the plant, eliminating the danger of fire, and the tendency to break down the oil due to heat is practically nil.

Eugene Tays

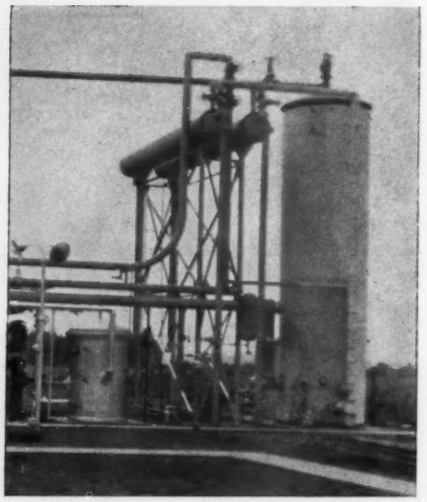
Regardless of the type used, it is of supreme importance that the temperature of the oil be maintained constant. This insures smooth operation of the plant and a more uniform and thorough stripping of the oil. This can be done either by manual control, temperature control instruments, or in the case of the steam preheater, by maintaining a constant boiler pressure. Any degree of heat can be obtained by simply carrying a boiler pressure which will give the required temperature.

The fuel used for firing the boilers in a natural gasoline plant is the gas leaving the plant after it has been stripped of its gasoline in the absorbers. It is generally necessary to reduce the pressure of this gas before going to the burners, which is accomplished by means of pressure regulators. To maintain a constant boiler pressure, a boiler fuel regulator is installed in the fuel line to the burners. It can readily be seen that it is a simple matter to maintain a constant boiler pressure and thus a constant temperature in the preheater. If the rate of oil flow through the preheater varies, the amount of steam required to heat it will vary. Thus there will be a tendency to cause a fluctuation in the boiler pressure. The fuel regulator will respond to this however, varying the amount of gas to the burners and thus maintaining a constant pressure.

As a general rule steam preheaters are installed close to the stripper and heat inter-changers and on a level with the latter. This is done in order to shorten the connections between the units as much as possible. When so installed the operator is confronted with the problem of disposing of the condensate. This can be done by means of a steam trap discharging into the hot well, or some other part of the plant where this condensate can be used. This method, however, is wasteful because the steam trap will discharge the hot water from a pressure equivalent to that in the preheater, to atmospheric pressure. In so doing there is a tendency for the water to flash into steam and thus there is quite a loss of water and heat. It means that the boiler will have to heat a fresh amount of water and thus consume more fuel. If the fuel has to be paid for, it amounts to quite an item. Unfortunately (from the operator's standpoint) all gasoline plants do not get their fuel free.

ELIMINATING WATER AND HEAT LOSS

This loss can be eliminated with very little added cost by installing the preheaters in an elevated position sufficiently high so that the water will return to the boilers by gravity. This height should be sufficient so as to provide a head of water that will balance the drop in pressure in the steam line to the preheater and the water return line to the boiler. As a general rule this height will be between three and six feet above the normal water line in the boiler. The distance should be measured from the bottom of the preheater so that all water will drain off as fast as it condenses. It is preferable to allow at least six feet as this gives a safe margin. If the preheater is close to the boiler and the steam and water return lines are large enough, three feet will be ample. There is one such installation at present which works very well. Originally the water was trapped out to the hot well, but later it was connected into the boiler without changing the position of the preheater. When the change was made the reduction in the amount of fuel used was so marked that the boiler fuel regulator and the burners had to be readjusted. Almost any desired distance between boiler and preheater is permissible as there is one installation in operation at present where the preheaters are over two hundred feet from the boilers. However, the shorter the distance the better.



Preheaters on typical high pressure installation of Cienaga Gasoline Corporation, 10,000 gallons per hour capacity.

The water return line can be connected to either the blow-off line or the feed water line. When connected to the blow-off line, the connection should be made between the blow-off cock and the boiler. Two valves with a check valve between them should be installed in the line just before it enters the blow-off line. The connection to the feed water line should be made as close to the boiler as possible with two valves and a check valve as in the former case. This installation can be made with any type of boiler.

The steam line to the preheater should be connected to it at two or three points equidistant from each other and evenly distributed along its length. This will insure an even distribution of steam in the preheater and minimize the pressure drop due to entrance of the steam into the preheater. The preheater should be slightly lower at the end where the water return line connection is made.

If the preheater load is sufficient for one boiler, then it is best to segregate one boiler for that service. Since there is no loss of water, except what little may leak out, no makeup will be necessary and the boiler will always stay clean. The only fuel used will be just that necessary to supply the heat taken up by the oil and what little is lost in the lines to and from the preheater. If there are two or more boilers in the

(*Continued on Page 72*)

Mercury *for* Use *in* Orifice Meters

By M. J. CEREGHINO
Engineer, Los Angeles Gas and Electric Corporation

¶ Four methods commonly used in mercury cleaning are treated in the following discussion. These are, distillation, filtration, agitation with air, and, washing with acid or alkali solution. Mr. Cereghino presented the paper before the recently organized Southern California Meter Association, at Anaheim, Calif., on August 25.

THE measurement of gases and fluids by means of orifice meters has been developed to a high degree of perfection during the past few years. The orifice meter is no longer regarded as a necessary burden but as an absolute necessity in the proper and accurate measurement of gases and fluids.

In this connection the mercury, which is used in practically all the different types of orifice meters, plays an important part. It is therefore necessary that some attention be given to this important factor in the operation of an orifice meter.

Thousands of pounds of mercury are used by Southern California companies in the sale of natural gas alone. Some meters use only a few pounds while others use as much as 30 or 40 pounds.

An orifice meter to work properly must not be sluggish in its actions. Sluggishness can frequently be traced to dirty mercury. Mercury in constant use in an orifice meter will gradually pick up impurities which tend to change it from a liquid to a semi-solid condition. It is this change in form that causes it to make the meter sluggish.

METHODS OF PURIFICATION

There are a number of common methods in vogue for purifying dirty mercury. These may be grouped into four principal classes: 1, Distillation; 2, Filtration; 3, Agitation with air; 4, Washing with acid or alkali solution.

Purification by Distillation: Mercury which is in a badly amalgamated condition must be distilled in order to produce a pure grade of mercury. It is impossible to acid wash or filter such mercury and secure a pure product.

The distillation of mercury may be carried on in two ways, that is, either under vacuum or by the ordinary straight distillation. The purity of the mercury is about the same for either method of distillation. In either case, oily matter and a few of the volatile metals distill over with the mercury vapor.

The vacuum distillation outfit is somewhat complicated and requires greater care in handling than the ordinary type of distillation. It possesses the advantage that the distillation is carried on under a lower temperature and therefore does not require the amount of heat necessary to produce evaporation of the mercury.

For ordinary purposes, the straight distillation is preferred, as the apparatus is more sturdy and the results obtained are entirely satisfactory for meter work.

The apparatus consists of a Nevada or open top iron retort with a ground in cover. This type of retort offers a distinct advantage over other types in that it holds more and there is space for expansion in the cover, preventing the possibility of fracture from expansion. The cover is held in place by a heavy yoke with a wrought iron wedge key, which will tighten and lock the cover in place with one blow of a hammer, and unlock as readily. They are made in capacities of from 12 lbs. to 175 lbs. of mercury.

The condenser consists of a 30-inch length of ¼-inch iron tubing surrounded by a 2-inch pipe as a water jacket.

The retort is fired by gas. By shielding the retort with an asbestos shield, the quantity of heat required to distill the mercury is materially reduced.

The distillation is carried on at a fairly rapid rate; care must be taken, however, to see that all of the mercury vapor is condensed as the mercury fumes are very harmful to inhale.

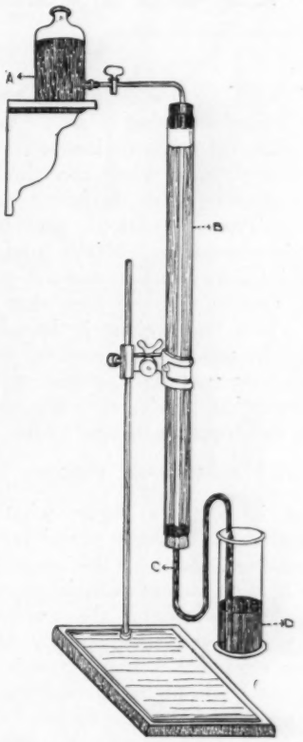
The mercury that is distilled should be acid washed in order to produce a clear, bright mercury as the product of distillation carries over with certain impurities which acid treatment will readily remove.

Purification by Filtration: Mercury which contains impurities that are not amalgamated with the mercury, can frequently be purified quite rapidly by merely filtering through a chamois skin.

Acid treatment should follow the filtration in order to obtain a finished product.

Purification by Agitation with Air: Where a mercury still is not available and when the mercury is not too badly amalgamated, the distillation process may be substituted by agitation by means of air.

In order to accomplish this, it is only necessary to place the mercury in a fairly large container and introduce compressed air at the bottom of the container so as to produce a violent agitation. This is continued for 24 hours. At the end of this time the air is turned off and the scum is allowed to settle out. The mercury thus obtained is acid washed and a very bright appearing mercury is the result.



Sketch of apparatus used for purifying mercury by the nitric acid method.
A. Receiver containing mercury to be purified.
B. Acid solution in glass tube.
C. U tube containing the purified mercury acts as a seal.
D. Container of purified mercury.

The oxides of zinc, copper and lead are completely changed to oxides by air agitation.

Purification by Nitric Acid: The treatment of mercury with nitric acid yields a very pure and bright mercury. The general practice of the Los Angeles Gas & Electric Corporation has been to treat all our mercury whether distilled or not, by means of nitric acid wash. The apparatus (shown in the above sketch) for doing the work consists of a long glass tube about 40 inches in length and one inch in diameter. At one end of the tube is placed a cork and a bent glass in the form of a U tube, the length of the U being about 4 inches. The large tube is then clamped to a suitable support. The end containing the U bend is placed at the bottom. A small quantity of clean mercury is run into the tube. This

(*Continued on Page 61*)

Selling Space Heating

An Interview with

C. B. BABCOCK

President, C. B. Babcock Company

By GEORGE H. FINLEY

WHAT are the significant trends in space heating by gas? What does this class of load offer the gas company? and what can the gas company do to realize its fullest possibilities? These questions are large enough in import to justify a brief excursion into the background of space heating, and it will be seen that the factors which had weight in launching the space heater are still present, while new developments have placed within the gas merchandiser's reach the power to push this business to new peaks.

THE MISSIONARY PERIOD

About 1915 there began what we might call the missionary period for gas space heating. Prior to this stage, and because of such factors as high gas rates, and inefficient heaters, the gas space heater was looked upon purely as an auxiliary appliance. It was used only intermittently, brought out only at the coldest periods of the year to supplement coal and wood fireplaces. No one had caught the larger view for space heating.

But in 1915 one of the "missioneries" of the space heater industry conducted a survey of American homes which provided him and the gas heater industry generally with a startling vision of the place the space heater should hold in the gas picture. The glaring fact that materialized out of the survey made by A. H. Humphrey, president of the General Gas Light Company, was that there were some three millions of unused fireplaces in the United States. These ornamental fireplaces, housing either potted plants or some fixture installed to merely imply heat, represented a tremendous source of revenue for the gas utility.

While this huge, comparatively untapped market would in itself have almost compelled the gas man's attention, there was another aspect to the situation—and one of increasing concern. While half of the gas sendout still went to the lighting load, the seers of the industry knew that the day was not far removed when the American love of convenience would definitely bar this field to the gas company—even though gas represented a superior lighting medium.

And so, holding fast to the newly-won and basic cooking load, the progressive gas man was casting about for a substitute for the diminishing lighting business —and at this opportune time it is small wonder that the missionary of space heating made converts by the hundreds.

C. B. Babcock

As gas has become entrenched as the economic fuel, space heating has kept pace. Gas utilities have found to their satisfaction that space heating not only builds an attractive load, but that the radiant type heater is one of the most effective agencies for gas advertising. Other equally essential gas appliances do their work in the background—the furnace and the water heater in the basement, the range and refrigerator in the kitchen, the work shops of the home. The heater graces the living room, the dining room, functions in hours of leisure and comfort, and speaks the gas gospel openly to an audience which is in a receptive mood.

But the problem of getting gas into those unused fireplaces is only beginning to be answered; and answered it must be, or electricity will step in and claim a load that by economic right should go to gas.

There is no mystery about the securing of this load for gas. It will only come through consistent selling on the part of the gas company. Such powerful agencies as national and trade advertising of heating appliances will have a part, but they are of themselves futile if allowed to go unsupported by consistent direct selling. Incidentally, there must be more national advertising of space heating by gas, and the manufacturers must not be left to bear the entire responsibility for this advertising.

In the selling of space heating there is no secret formula which will assure the gas company new business department of success at a minimum effort. Hard work, plus intelligent direction and an acceptable piece of merchandise, always has been and bids fair to continue to be the producer of sales.

Sales executives must come to recognize the heater market as an all-year market. Heating should be sold and advertised twelve months out of the year, and the gas company will iron out many a wrinkle in its sales problem when this fact is accepted. It is true that the public are creatures of necessity, accustomed to small-lot buying, and little inclined toward looking to the morrow, or putting in heating equipment before the first cold spell. But they can be made to think in futures if the company sales set-up is right.

Each season of the year makes its special demands on the space heating department. The first fall months require the least intensive sales effort, but the first of December introduces a need for special campaigning to counteract Christmas buying. The gas company must lay its plans well if it is to forestall the consumer from so tying up his purchasing powers that there will be created a sales resistance which will hold over into the new year. A complete campaign should be mapped out, with a tie-in of newspaper advertising, displays, use of manufacturers literature and broadsides to consumers—to recreate the desire for heating equipment. Time payment should be stressed, over at least a twelve-month period. Salesmen should be thoroughly groomed for the campaign, with special quotas for all districts. These quotas, be it observed, should be arrived at with care, and should be within reach; high enough to stimulate extra effort, yet definitely accomplishable, so that failure of reaching quota will not dampen sales enthusiasm.

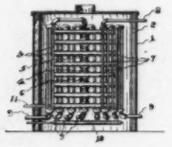
SUMMER SELLING

Experience teaches that the momentum of the December campaign will carry over into February, when there is need for another campaign to extend into late spring. Then comes summer, the season which should mark the strongest selling, yet which in the past has witnessed an almost general slump in sales effort. Space heaters offer a wealth of possibilities for summer selling. The period design has taken the gas radiant type appliance out of the drab heater class and raised it to the rank of a quality home furnishing. In summer particularly heaters should be sold as furniture. Salesmen should know historic designs, and should sell heaters as they have for years been sold in England, to harmonize with the home interior. Period models are a guarantee of future

(*Continued on Page 59*)

THIS MONTH'S PATENTS PERTAINING TO THE INDUSTRY

1,632,432. OIL-GAS APPARATUS. EDWARD CAMERON, New York, N. Y. Filed Apr. 4, 1925. Serial No. 20,870. 3 Claims. (Cl. 48—94.)



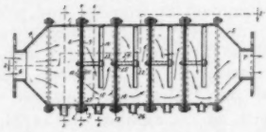
1. In oil gas making apparatus, the combination of a series of superimposed gas generator sections, each having a substantially horizontally arranged passage formed therein for the passage of fluid, the outlet of one section being in communication with the inlet of the section above it whereby fluid may flow through said sections in series; the lowermost section having a fluid inlet and the uppermost section a fluid outlet; a series of vertically arranged gas generator sections surrounding the first mentioned series of sections, said vertically arranged generating sections being connected alternately at their lower and upper ends; the first of said vertically arranged sections being in communication with the oulet of the upper horizontal section; and means for heating said horizontal and vertical sections.

1,632,297. COOLING TOWER. JOHN SIMON FLUOR, Los Angeles, Calif., assignor to Fluor Construction Co., Los Angeles, Calif., a Corporation of California. Filed Oct. 27, 1925. Serial No. 65,123. 10 Claims. (Cl. 261—108.)

3. In a cooling tower of the class described, a plurality of supporting posts, angular brackets secured to said supporting posts in superimposed relationship, said brackets having flat, upwardly inclined supporting portions, louvers resting at their lower ends upon said angular portions between the brackets and the supporting posts,

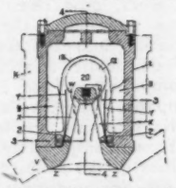
and means connected to each louver intermediate its ends serving to fasten it to the bracket next above on said supporting posts.

1,632,325. GAS SCRUBBER. EVALD ANDERSON, Alhambra, Calif., assignor to International Precipitation Company, Los Angeles, Calif., a Corporation of California. Filed May 26, 1924. Serial No 715,877 7 Claims. (Cl. 183—112.)



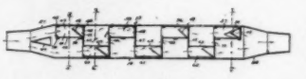
1. A gas scrubber comprising a plurality of separable units connected for passage of gas therethrough successively, each of said units comprising, first, housing means adapted to confine such gas; second, agglomerating means provided with a velocity-producing plate having openings of relatively small total area and an impact plate presenting surfaces opposite said openings in the velocity-producing plate and itself provided with openings adjacent said surfaces and of relatively large total area; third, eliminating means following said agglomerating means and adapted to cause a change in direction of flow of gas while presenting a relatively large total open area for passage of gas therethrough; and fourth, drain means for removal of liquid from the bottom of said unit.

1,632,155. GAS COMPRESSOR. CARL W. VOLLMANN, Montreal, Quebec, Canada. Original application filed Feb. 18, 1922, Serial No. 536,626, and in Canada Jan. 13, 1922. Divided and this application filed Nov. 7, 1923. Serial No. 673,285. 1 Claim. (Cl. 251—119.)



In a gas compressor of the type described, the combination with a combined cylindrical discharge member and valve chamber, of a circular base with converged lower side, such base having a hollow upwardly tapered member having in its sides parallel elongated ports, the lower end of such upwardly tapered member being spaced from the interior of the cylindrical member, flat steel spring check valves controlling the parallel elongated ports and having their lower ends within the said spaces, clamping bars accommodated within the said spaces and clamping the lower ends of the steel spring valves, the discharge member having a discharge opening in its side and its open top, a cap removably secured over the open top, and the top of the tapered member being flat and having a screw-threaded hole for the purpose set forth.

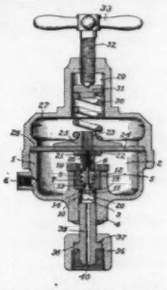
1,623,636. GAS-SEPARATING APPARATUS. MOORE M. REYNOLDS, Dawmont, W. Va. Filed Oct. 14, 1926. Serial No. 62,459. 4 Claims. (Cl. 183—75.)



1. In apparatus of the character described, a compartment provided adjacent to one of its ends with an inlet opening and adjacent to its opposite end with a screened outlet opening, the outlet opening being spaced from the top of the compartment, a screen covering the top of said compartment, a curved inclined deflector arranged within said compartment, adjacent to and in advance of the screened opening to cover the same, the top of the deflector being spaced laterally from the screened opening, said deflector serving to deposit the fine particles contained within the gases upon the bottom of said compartment, and means to pass gases through the compartment.

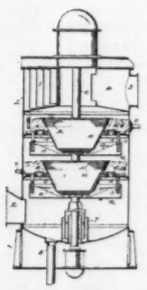
1,637,764. PRESSURE REGULATOR. THOMAS COLES, Homestead, Pa. Filed Feb. 16, 1926. Serial No. 88,568. 5 Claims. (Cl. 50—23.)

1. A high pressure gas regulator comprising a body, a high pressure and low pressure chamber therein, a communicating passageway therebetween, a valve head movable axially under impulse of gas pressure onto a seat to close said passageway, said valve head having two



frusto-conical faces merging into each other, and adapted to successively engage two frusto-conical faces on the valve seat to close said passageway

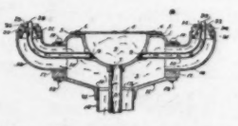
1,637,975. LIQUID AND GAS CONTACT APPARATUS. FREDERICK H. WAGNER, Baltimore, Md., assignor to The Bartlett Hayward Company, Baltimore, Md., a Corporation of Maryland. Filed June 17 1925. Serial No. 37,796. 8 Claims. (Cl. 261—91.)



1. In an apparatus of the character specified, the combination of a casing; means for spraying a liquid transversely within the casing, a receptacle to which the sprayed liquid is returned and from which it is withdrawn by and spraying means; means for introducing gas into the casing and forcing the same upwardly through the spray; and means located intermediate the spraying means and the receptacle for maintaining a body of liquid within the casing at a point below the path of the spray, through which body of liquid the gas must pass as it is forced upwardly through the casing.

1,637,772. AIR-BLAST GAS BURNER. CHARLES F. HECKEL, Newport, Ky., and EDWARD MESSER, Pittsburgh, Pa.; said Heckel assignor to said Messer Filed Mar. 22, 1923. Serial No. 626,767 12 Claims. (Cl. 158—110.)

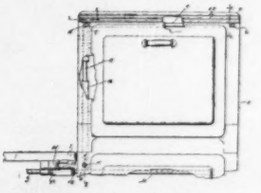
1. In combination with a gas furnace and contained therein, a gas chamber with means for admitting gas thereto, an air chamber surrounding said gas chamber and means for admitting air thereto, a plurality of gas outlets leading and radiating from said gas chamber, a plurality of air outlets leading from said air chamber and encircling said gas outlets, respectively, in spaced apart relation thereto, and adjustable means in the outer



end of said air outlets with means therein by which the air flow and pressure may be regulated, substantially as set forth and for the purposes specified.

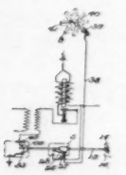
1,623,576. OVEN HEAT-CONTROL DEVICE. EMIL L. CLAUS and WALTER E. CLAUS, Milwaukee, Wis., assignors, by direct and mesne assignments, to Milwaukee Gas Specialty Company, Milwaukee, Wis., a Corporation of Wisconsin. Filed Jan. 24, 1921. Serial No. 439,470. 12 Claims. (Cl. 236—15.)

1. In a device of the class described, the combination of an oven having a burner, a valve for controlling the supply of fuel to said burner, said valve having a movable controlling element, a heat responsive device positioned within the oven, an arm connected with said device, an adjustable connection between the movable element of the valve and the arm whereby the valve is adjustable for a



desired temperature, and said movable element moving upon the expansion and contraction of the heat responsive device under temperature changes to control the flow of fuel to the burner and maintain the temperature within the oven substantially at the desired degree.

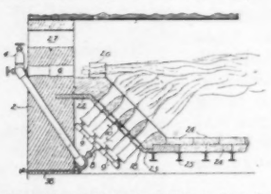
1,635,104. GAS-IGNITING DEVICE. SAMUEL JOSEPH WOODS, Newport, R. I. Filed July 7, 1925 Serial No 42,053. 6 Claims. (Cl. 175—115.)



1. An electric lighter for the burners of gas stoves having valves regulating the supply of gas thereto, an electrical ignition system including a primary circuit and a secondary circuit, a sparking device associated with each burner of the stove, said sparking devices being embodied in the secondary circuit of the ignition system, and means including a single circuit maker and breaker arrangement separate from and independent of the electrical ignition system operable from any of the valves for making and breaking the currents when any valve is turned on

1,599,015. GAS BURNER. FRANK E. JACKSON and RICHARD A. WALLINGFORD, Bakersfield, Calif. Filed Feb. 15, 1923. Serial No. 619,077. 2 Claims. (Cl. 158—1.)

1. A burner mounting having an inclined wall, the said wall being formed of a series of bars, each bar having recesses in its edge with notches formed in the recesses and notches of adjacent bars registering to form cups therethrough, the set of bars forming a substantially flat wall surface and a series of cylindrical burners having segmental lugs at their ends adapted to pass through the said notches in the assembled bars forming a bayonet type connection, a collar fitting against the outside surface of the bars, and a molding of plastic fire resisting material formed on the bars between the

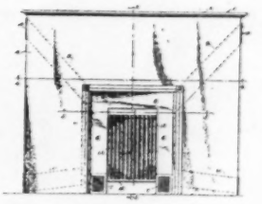


burners, said material being molded to form flared discharge nozzles, the material between the adjacent nozzles meeting in a pointed edge.

1,628,263 GAS COCK OR VALVE. FRANK W MCGEE, Redlands, Calif. Filed Mar. 22, 1926 Serial No. 96,516 2 Claims (Cl. 67—16.)

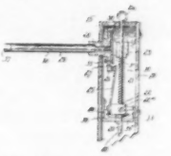
1. In a gas-cock, the combination of a body and a rotatable plug with cooperating gas ports, said body having a fixed stop on the said body, a single stop member mounted to move with the plug for engaging the fixed stop in the "off" position of the gas-cock, a handle for rotating the plug in a direction to bring the gas-cock to its "full on" position with the gas ports in full communication, said body having a second stop beyond the position of the stop-member in the "full on" position of the gas-cock and cooperating with the stop-member when the plug is rotated further in the same direction to hold the gas ports in partial communication, to produce a small flame, said second stop-member being constructed to be adjusted longitudinally and mounted so that its end face abuts against the stop-member on the plug, and accessible from the exterior of the valve to enable the size of the small flame to be regulated.

1,629,384. GAS HEATER. EARL R. HOLLAND, Mansfield, Tex. Filed Jan. 19, 1927. Serial No. 162,155 4 Claims. (Cl. 126—104.)



1. A heater of the class described, comprising a burner, flues adjacent the burner, cold air conduits communicating with the flues, ducts in communication with the flues said ducts serving to discharge heated air therefrom, a water containing tank adjacent the burner, and a manifold in communication with the tank and ducts.

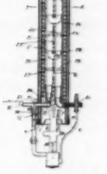
1,637,143. GAS BURNER VALVE-OPERATING DEVICE. ALFRED J. FRASER, El Paso, Tex. Filed Jan. 21, 1926. Serial No. 82,828. 4 Claims. (Cl. 126—351.)



1. Valve operating mechanism for the gas burner of a water-heater comprising a reciprocating valve operating rod having a lug thereon, a spring actuating the rod to close the valve, a lever for operating the rod against the action of the spring to open the valve, and means for operating said lever, together with a catch carried by the lug on the valve-rod and engaging a fixed member for holding the valve open, a spring-finger engaging the catch for releasing the same, and a thermostat operating the spring-finger.

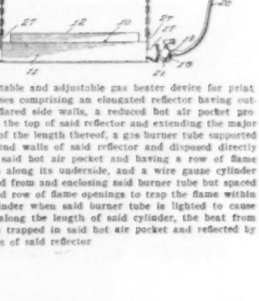
1,636,907 WATER HEATER. ALBERT E. HALL, Los Angeles, Calif., assignor, by mesne assignments, to August J. Hartfield, Huntington Park, Calif. Filed July 15, 1924. Serial No. 726,184. 4 Claims. (Cl. 122—250.)

1. A water heater comprising a casing, a pair of water heating coils in said casing, said coils being intercoiled between each other and connected at their upper ends the lower end of one coil being connected to a water supply pipe, two tubes extending through said coils, the lower end of one tube being connected to the lower end of the other coil the upper ends of said tubes being



connected together the lower end of the other tube leading from the casing, and a burner in the lower end of the casing

1,636,790. GAS HEATER FOR PRINTING PRESSES. FRANCIS X. SMITH, New York, N. Y. Filed Oct. 9, 1926. Serial No. 140,588. 1 Claim. (Cl. 34—18.)



A portable and adjustable gas heater device for printing presses comprising an elongated reflector having outwardly flared side walls, a reduced hot air pocket provided in the top of said reflector and extending the major portion of the length thereof, a gas burner tube supported by the end walls of said reflector and disposed directly beneath said hot air pocket and having a row of flame openings along its underside, and a wire gauze cylinder supported from and enclosing said burner tube but spaced from said row of flame openings to trap the flame within said cylinder when said burner tube is lighted to cause a glow along the length of said cylinder, the heat from which is trapped in said hot air pocket and reflected by the walls of said reflector

Courtesy Card Popular *in* Rocky Mountain States

By GEORGE E. LEWIS

Executive Manager, Rocky Mountain Committee on Public Utility Information Denver, Colo.

THE Courtesy Card, as a means of building customer goodwill, is now in general use in Colorado, New Mexico and Wyoming and bids fair to be adopted nationally, according to reports from various states.

The Courtesy Card, given to departing customers in good standing, was originated a bit over one year ago, through the joint efforts of the Public Relations and Accounting Sections, Rocky Mountain Division, National Electric Light Association.

While the card was originated in an electric organization, its use is by no means confined to electric companies. The gas companies of the three states are making quite as general use of it. The companies which have adopted the Courtesy Card are finding, according to a recently completed survey, that its value goes beyond its goodwill building features. It is also helping to establish the credit-standing of applicants for gas or electric services. Credit-standing is fairly well established and accepted when the holder presents his Courtesy Card to the company to which he applies for service.

The primary purpose of the Courtesy Card was to evolve a method whereby information of the good standing of a customer could be transmitted from one utility to another, so that when the customer applied for service, this information would be readily available and the embarrassment of asking him for a deposit eliminated. The plan is working out as originally intended, not one instance of abuse of the privilege bestowed by the card having been discovered. Necessarily, the use of the card was limited to companies of Colorado, New Mexico and Wyoming, the majority of which had previously agreed to the provisions governing its issuance and acceptance. Since that time the National Accounting and Public Relations Sections, National Electric Light Association and various departments of the American Gas Association, have taken cognizance of the card. As a result, it is being used by some of the larger eastern gas and electric organizations. According to recent reports, other companies will soon inaugurate use of the card.

A standard set of rules and conditions surrounding the issuance of the Courtesy Card and its acceptances is issued in Colorado, New Mexico and Wyoming. The promotion of the Courtesy Card idea was undertaken by the Rocky Mountain Committee on Public Utility Information and the standards of usage were issued by that committee.

The purpose of the Courtesy Card and the method of its issuance are set forth in a placard, which reads:

COURTESY CARD

Conditions and Purposes of Issuance (For Information of Application and Credit Men)

To be issued by Gas and Electric Companies in Colorado, Wyoming and New Mexico.

Conditions

To be issued only to domestic customers in good credit standing when leaving a city (Prompt payment of all obligations for a minimum period of 6 months necessary).

Card to be issued with thought in mind that many utilities to which it is presented by holder will use it as basis of credit.

Card to interfere in no way with the rules and regulations of utility companies.

Purpose

Primarily to give the customer recognition of his good standing and to create in him an appreciation for the service and courtesy of the utility.

To remind the customer that good service is mutual and encourage future performance on his part.

To pass on to other utilities the good record of a customer.

To create incentive for a customer to pay all utility accounts before leaving a city.

To make possible elimination of demand for deposits from new customers when deposits are unnecessary.

Application

Card to be given or mailed customer only after payment of final bills.

To prevent possible use for credit purposes, card to be taken up by company to which it is presented.

For it to have a wide acceptance necessarily means that it must be issued under the same circumstances in all cases, as outlined above.

The success of this Courtesy Card depends on the care in issuance and the reception of the customer upon its presentation.

PLEASE PRESERVE AND KEEP DISPLAYED IN CONVENIENT LOCATION FOR EMPLOYEES ONLY

W. C. Sterne and J. E. Loiseau were the originators of the Courtesy Card.

CREWS RUSH WORK ON EMPIRE GAS PIPELINE

Four hundred men have been added to the crews employed by Booth-Flynn, contractors in charge of the construction of the Empire's 20-inch natural gas pipeline from the Panhandle gas fields to Wichita, Kans. This will make a total of approximately 1000 men who are rushing the huge project to completion.

Five gangs of men are working on the main line and two gangs on river crossings, one of which is working on the Canadian river crossing and the other on the North Canadian crossing near Woodward. There will be seven river crossings, three of which will be spanned by three 12-inch lines. About 20 per cent of the line had been laid and covered early in September. Work on the compressor stations at Pampa, Tex., Mooreland, Okla., and near Wichita, Kans., is progressing rapidly. These stations will be in readiness for operation well in advance of completion of the pipeline, which is to be ready by the first of the coming year.

NEW OFFICE IN REDLANDS

A new district office building is to be built by the Southern California Gas Company in the city of Relands, Calif. It is expected that the new building will be completed by January fifteenth.

GAS FOR POWER PLANT

Natural gas is to be used as fuel in the new Public Service Company electric light and power plant now under construction near Weleetka, Oklahoma, the gas to come from the gas fields south of Weleetka.

Southwest Natural Gas Men *in* Houston Meeting

THE program for the meeting of the Southwest Division of the Natural Gas Department of the American Gas Association which is to be held in Houston, Texas, October 31 and November 1 is rapidly taking such shape as to promise the most interesting meeting the Division has held to date.

The meeting will occupy two days. It will hear and discuss five or six papers by men of the industry in the Southwest who have pioneered the investigations that are their subjects for discussion. The program will also include a number of pertinent questions for discussion, all of them peculiar to the natural gas business, with especial reference to the fields of the Southwest.

PAPERS ON PROGRAM

Among the subjects to be presented and discussed are "Developments in Conservation of Natural Gas," by William F. Chisholm of the Louisiana Conservation Commission. A paper is expected to be delivered by officials of the United States Bureau of Mines, dealing with the measurement of the open flow of natural gas wells. Acquainting the public with the gas industry and the advantages of institutional advertising for gas companies, will be the subject of a paper by Keith Clevenger of the Empire companies. A general review of the natural gas problems of the Southwest will be made by Frank Kirk of the Houston Pipe Line Company in a paper he is preparing.

A large number of practical questions have been assigned to various men who will lead discussions that are calculated to make a most valuable open forum of men interested in the details and fine points of the production, distribution, and marketing of natural gas in the Southwest.

EXPECT 300 ATTENDANCE

Arrangements are being made for adequate entertainment at Houston and preparations are under way to care for a convention of at least three hundred gas men. The convention last Fall in Dallas was attended by 210 gas company representatives.

There will be no exhibit at the Houston convention as the Houston event will follow the big Chicago convention at which a large exhibit of appliances and apparatus will be made.

Geo. McQuaid is secretary of the Southwest Division, with headquarters at Dallas, Texas. H. C. Morris of Dallas is in charge of the program for the October meeting.

CLEVENGER HEADS EMPIRE PUBLIC RELATIONS

Keith Clevenger, active in Oklahoma public utilities work, now chairman of the Public Relations section of the Oklahoma Utilities Association and for the past four years director of public relations for the natural gas companies of the Empire Gas and Fuel Company, Bartlesville, will now direct the public relations, employee educational, customer ownership, publicity and advertising activities of the Empire Companies according to an announcement by H. R. Straight, vice-president and general manager of the company.

O. W. Weaver, a former Kansas newspaper man, who has been associated with the Empire Companies for the past three years, will be associated with Mr. Clevenger in charge of the company's stockholders service and employee customer ownership department.

LEFT: Typical view of work on 24-inch gas main being laid in Kansas City. This main is a part of the extensive pipe line expansion program, which, when completed, will cost approximately three-quarters of a million dollars, the line to have a carrying capacity of 110,000,000 cubic feet per day. RIGHT: A 12-foot fill in new Kansas City gas line construction, with 24-inch main set on 15 concrete piers.

Kansas City Has Large Pipe Line Program Under Way

KANSAS CITY is one of the fastest growing cities in the United States. This rapid growth is largely due to its geographical location in the heart of America and to the natural resources that the city enjoys. It has long been known as a city of beautiful homes and it is becoming an enormous industrial center—a city of great future possibilities.

Natural gas has played an important role in the city's development in that it has supplied the domestic users with a clean, convenient fuel, and is much in demand for industrial fuel purposes.

To meet Kansas City's present gas fuel requirements and foreseeing future needs, the Kansas City Gas Company is laying at the present time, nine miles of 24-inch gas main at an approximate cost of $500,000. This main joins on the the Kansas Natural Gas Company's main lines and ties in with the new 20-inch line on Linwood which feeds East and North through the Blue Valley industrial district.

The Kansas City Gas Company has begun an extensive pipe line expansion program. When completed this system will cost approximately three-quarters of a million dollars and will have a carrying capacity of 110,000,000 cubic feet of gas per day.

GREAT FALLS LINE SURVEY BEGINS IN SEPTEMBER

Work was started early in September upon the project to bring natural gas to Great Falls, Montana, from the Kevin-Sunburst field through a $2,000,000 pipeline. The gas will be taken direct from the properties of the Natural Gas Development Company in the Kevin-Sunburst field. The line, now being surveyed, will be approximately 100 miles in length and will connect the field north of Shelby with the Great Falls Gas Company, as distributor, at the north limits of Great Falls. The contract for the construction, which will be begun as soon as a survey has been completed, has been awarded to the Hope Engineering Company.

The Great Falls Gas Company, under the direction of A. H. Sikes, manager, has been preparing for several years for this change-over, and with the arrival of natural gas will be able to distribute it with few changes in service facilities.

DALHART, TEXAS, LINE

Construction work on the distribution line which will serve natural gas to Dalhart, Texas, is now under way. The line will be thirty-five miles in length, extending from the Morton well near Dumas, in Moore County. The pipe will be 8 inches in diameter. A. D. Morton and Stephen Brown are holders of the franchise.

MERGER REPORTED

A merger of the Southern Gas Company, the Houston Gas and Fuel Co., and the Houston Gulf Gas Co., into the Houston Gas Securities Co., was reported late in September.

NEW GAS PLANT, HOLDER FOR VANCOUVER, B. C.

BEGINNING an extensixe program of expansion for its gas department, the British Columbia Electric Railway Company, Vancouver, B. C., plans the early erection of a new "waterless" gas holder of 3,000,000-cubic feet daily capacity, as well as a water gas plant of the same capacity—the two projects totalling a cost of $650,000.

The new plant and holder are to be finished within a year, for the winter season of 1928-1929, according to present plans. John Keillor, gas engineer for the utility, is making a three-months trip to Europe to let the contract for equipment, and to inspect gas works practice in England and on the Continent.

The present capacity of the Vancouver plant is approximately 6,000,00 cubic feet a day, and with winter demand increasing about 1,000,000 cubic feet each year, additional manufacturing capacity will be required before the peak season of 1928-1929.

Future gas requirements in Vancouver have been estimated over a period of twenty years, and a tentative prorgam of expansion in gas facilities arrived at. The present contemplated additions are expected to carry the company over until 1932, when a further installation of coal gas retorts and another water gas set at the new plant, with a combined capacity of 5,500,000 cu. ft. daily, will be required. Eventually a capacity of 25,000,000 cu. ft. will be attained, which will meet the needs of Greater Vancouver and New Westminster until 1947. The complete program, of which the present plant and holder is the first unit, calls for an expenditure of $5,600,000.

CITY POSTPONES REQUEST TO OPERATE UTILITY

The hearing before the California Railroad Commission of the application of the city of Yuma, Arizona, for a certificate of convenience and necessity to construct and operate water works, light and gas plants or to purchase the existing utilities of the Arizona Edison Company has been indefinitely postponed at the request of the city council.

ABERDEEN FRANCHISE PAVES WAY TO EXTENSION

A 50-year franchise to supply Aberdeen, Washington, and its environs with natural and manufactured gas has been granted by the city council to the Washington Gas and Electric Company. The company plans an expenditure of $100,000 for extension of service in this territory. M. C. Hancock is resident manager of the company.

WYOMING OIL TOWNS MAY GET GAS

A survey is being made to determine the feasibility of laying a gas line from the La Barge field to the old field townsites of La Barge and Tulsa, Wyoming, for a domestic and industrial supply.

NEW WAREHOUSE

The British Columbia Electric Railway Company has now practically completed a new warehouse, on its Vancouver, B. C., properties, at an estimated cost of $35,000. The building will be three stories high.

WILL OFFER TO BUY CASA GRANDE UTILITIES

According to H. W. Hamblin, Utility Engineer for the Peoples Light and Power Corporation of New York, that company will soon make an offer to the city council of Casa Grande, Arizona, for the purchase of the municipal water and light plant of that city. The Peoples Light and Power Corporation owns light, power and gas properties in several Arizona cities.

BETTER SERVICE AT MIAMI

Improvements in gas service for Miami, Okla., is under way for the Consumers Gas Company. The town border gas regulator will be moved to a point nearer the center of the city, which will enable the company to supply more even pressure. Some new lines are also being constructed which will improve service in the residential section.

MAY PIPE NATURAL GAS TO WASHINGTON TOWNS

A company may be formed to pipe natural gas from the Benton County gas wells of Washington to Pasco and Kennewick, with the intention of piping the gas to either Walla Walla or Yakima, Wash., at a later time.

MORE FUEL OIL USED FOR GAS MAKING IN 1926

A report of the Department of Commerce, Bureau of Mines, on fuel oil marketed on the Pacific Coast in 1926 has the following to say regarding oil used for gas making:

The consumption of oil as a gas making material during 1926 in California was 5,014,183 barrels, an increase of 618,406 barrels over 1925. Artificial gas produced from oil increased from 20,848,918 thousand cubic feet in 1925 to 25,974,899 thousand cubic feet in 1926. The consumption of oil per thousand cubic feet of gas dropped from 8.86 gallons in 1925 to 8.11 gallons in 1926. This unit decrease in oil consumption resulted largely from the improved quality, from the gas making viewpoint, of the oil delivered, special attention being paid to the hydrogen content of the oil. One coal gas plant, with a capacity of 190,000 cubic feet per hour, was placed in operation in California during 1926. Its production of gas totalled 42,114 thousand cubic feet, using 2,155,293 pounds of coal and 138,673 gallons of engine oil for carburation, or an average of 3.29 gallons per thousand cubic feet.

SOUTHERN CALIFORNIA GAS MEN HEAR LAB. HEAD

Los Angeles gas appliance manufacturers, gas company representatives, and others interested in the progress of the testing work at the American Gas Association Laboratory, had an opportunity in September to hear R. M. Conner, director of the Laboratory, who spoke at three meetings held in Los Angeles. One meeting was a luncheon at the Biltmore Hotel, at which Mr. Conner was the guest of A. B. Macbeth, president of the American Gas Association and executive vice-president of the Southern California Gas Company.

A meeting intended especially for manufacturers of gas appliances was held at the Los Angeles Gas and Electric Corporation building on Monday evening, September 19, with a good attendance of manufacturers present to hear directly of the aims and procedure of the Laboratory. Mr. Conner reports a good reception of the Laboratory program on the Coast.

City Council *of* Denver Sanctions Natural Gas

THE gas industry read with more than ordinary interest the following news dispatch from Denver, Colorado, released in September:

"The City Council of Denver, Colorado, on Tuesday night, September 13, passed on final action a rate ordinance permitting the Public Service Company of Colorado to serve natural gas to Denver.

"Thus the Public Service Company joins with the Standard Oil Company of New Jersey and the Prairie Oil and Gas Company in bringing natural gas from the Texas Panhandle fields in the vicinity of Amarillo, Texas.

"Clare N. Stannard, vice-president and general manager of the Public Service Company of Colorado, joined by George H. Shaw, general counsel for the company, are to be congratulated upon the splendid result which they have accomplished.

"The introduction of natural gas into the City of Denver, it is claimed, will be the means of accelerated industrial activities in the city and will bring to it the comforts, luxuries and smokeless conditions which it long has sought.

"General satisfaction and rejoicing by Denver citizens is expressed upon the final decision enacted by the Council at its meeting September 13.

"Preliminaries of pipeline construction under way.

"Schedule of rates to be employed follows:

"First 400 cu. ft. or less per month, ninety cents.

"Next 600 cu. ft. per month, fifteen cents a hundred.

"Next 1000 cu. ft. per month, twelve cents a hundred.

"Next 1000 cu. ft. per month, seven one-half cents a hundred.

"Next 7000 cu. ft. per month, six cents a hundred.

"Over 10,000 cu. ft. per month, five cents a hundred.

"Special rates for industrial purposes."

The Denver Council's action is understood to open the way to the consummation of the $22,000,000 transmission project for which tentative contracts were entered into some months ago, following the renewal of the Public Service Company's franchise in Denver. A change over to natural gas in Denver will mean considerable work on the distribution system there, previously estimated by the company to call for $2,000,000 expenditure. The major item is reported to be the laying of 20 miles of 20-inch intermediate high pressure mains around the city.

From the Amarillo gas fields the line will run a course approximately 400 miles in length, and representatives of Ford, Bacon & Davis, Inc., the engineering firm in charge of the propect, have been at work some time on right of way. The Colorado Interstate Gas Company, representing the combined interests named in the statement above, has been organized to transmit the gas.

Several towns en route will be served, and the largest single consumer will be the Colorado Fuel and Iron Company, which is reported to have contracted for four billion cubic feet annually for ten years, at a rate of 16 cents a thousand for the first five years.

LAY MAINS TO YUCAIPA

The Southern California Gas Company is laying mains from Redlands, California, to the townsite of Yucaipa.

CALIF. NATURAL GASOLINE ASSN. PLANS TWO-DAY MEET

What is perhaps the most important meeting yet held by the California Natural Gasoline Assn. will take place in Los Angeles on November 16 and 17, with Dr. G. G. Brown, who has been directing important research in motor fuels for the Association of Natural Gasoline Manufacturers, as the principal speaker. Dr. Brown is professor of chemical engineering at the University of Michigan, and his experimental work, which is being followed with intense interest by natural gasoline men, is conducted at Ann Arbor. He has appeared on programs of the Mid-Continent gasoline group, and has been persuaded to make the journey to California in order that West Coast men may hear of his work at first hand.

There will be other features, as yet not announced, on the program of the November sessions, with a banquet at the Biltmore Hotel concluding the meeting.

COMMISSION WORKER RESIGNS

Arthur T. George, assistant attorney of the California Railroad Commission for the last two years, today submitted his resignation to the commission to become effective October 1, 1927. Mr. George has resigned to resume the practice of law in Los Angeles and will be associated with the firm of Newlin & Ashburn in that city.

500,000 CU. FT. HOLDER FOR TUCSON COMPANY

Orders have been placed by the Tucson Gas, Electric Light and Power Company for material for the construction of a new gas holder of 500,000 cubic feet capacity, which will triple the present gas storage capacity. The new gas container will measure 100 feet in diameter at the base and will be of telescope form, having three parts. When fully expanded, the tank will be 80 feet tall. Across the top will be a huge arrow painted white pointing the way to the new Tucson municipal aviation field. The arrow will be kept lighted at night.

H. L. EGGLESTON SPEAKS TO SAFETY MEN AT CHICAGO

H. L. Eggleston, manager of the Pan-American Petroleum Company's Gas Department, spoke at a meeting of the Petroleum Section, National Safety Council, at Chicago, during the September 26-30 meeting of the section. "How We Promote Safety in Our Natural Gasoline Plants" was the subject of his paper, which took the form of a description of safety policies and practices worked out under his direction in the Pan-American Gas Department.

GOLD AND ENAMEL GAS RANGE IN RETAILER'S WINDOW

One of Los Angeles' prominent department stores, the May Company, has done the unusual in the display of gas appliances. A kitchen range, made entirely of gold and enamel, was recently the feature of one of the company's windows. The range, valued at $1000, was made for a furniture show in San Francisco.

MAY BUY COLORADO SPRINGS GAS PLANT

The Public Service Company of Colorado is reported to be contemplating the purchase of the Colorado Springs municipal gas plant, which is valued at $600,000.

FRUITS RIPENED BY GAS CONSTITUENT

The manufactured gas industry has recently added to its list a new form of service having nothing to do with heat, according to reports from the Minnesota College of Agriculture.

Fruit and vegetables can be stored green and ripened at will, or can be picked before maturity and ripened naturally by the use of ethylene, a constituent of manufactured gas, according to experiments made by Dr. R. B. Harvey, of the Minnesota College of Agriculture, described in the Scientific American.

Ethylene has been made from manufactured gas and used as an anesthetic, but its application to fruit and vegetables to increase their respiratory rate and so induce a natural ripening process is a recent development.

MANUFACTURED GAS CO.S TO REQUIRE $2,000,000,000

The manufactured gas companies of the United States will need not less than two billion dollars of new capital within the next ten years for equipment and extensions to meet the increasing demands for gas service, according to Harry C. Abell, former president of the American Gas Association. That is an increase of fifty per cent over the present capitalization of the gas utilities, estimated at more than four billion dollars.

MODEL HOME GAS EQUIPPED

In the Oregonian Model Home built on Terwilliger Heights, in Portland, Oregon, the Portland Gas & Coke Company carried an extensive exhibit. In the basement of the home there was a double unit Gasco furnace, and an Ice-O-Lator gas refrigerator generating unit. The refrigerating cabinet was in the kitchen, and as a special demonstration of this, frozen desserts and cool drinks were served to the visitors at the exhibit. Other articles exhibited were hot water heaters, a gas heated clothes dryer, a gas incinerator, a radiant-fireplace and a gas range.

TIRE MAKER TO USE GAS AT LOS ANGELES PLANT

Los Angeles Gas and Electric Corporation announces that the Goodrich Rubber Company willl use gas in its new factory now being built in Los Angeles. The first unit of the gas installation will consist of two boilers, each of five hundred horsepower capacity. Gas coasumption of this first unit will total 40,000 cubic feet per hour.

ARROWSMITH'S NEW HEATER DISPLAYED

T. G. Arrowsmith's new storage water heater, trade-named the "Dependable," is now completed and is being displayed in his showroom at 661 Howard street, San Francisco.

The heater is novel in that the gas does not fire on a conducting element, but into a 2½-inch, 12-gauge boiler tube extending up in the water. This in turn discharges into a 4-inch tube, trapping the hot gases and thence through a 3-inch tube up through the boiler to the stack. A thermostat and snap-acting valve are at the cold water intake. According to the makers, on a test conducted by Smith, Emery & Co., engineers, the boiler showed an efficiency of 84 per cent, with no carbon monoxide present.

Display at Los Angeles Power Show, featuring gas-fired refrigerator

Gas-Fired Refrigerator Exhibits Shown *in* So. Calif.

SOUTHERN California Gas Company has maintained several exhibits of gas-fired refrigerators in the short time these appliances have been available on the West Coast. A permanent exhibit is conducted in the home economics department of a Los Angeles newspaper, and a gas-fired refrigerator was sent to Tulare late in September to be shown at the Tulare County Fair.

In co-operation with the National Refrigerating Company the Southern California Gas Company maintained the exhibit illustrated in the view above at the Power Show, Los Angeles, August 22 to 28, featuring a model G-10 Ice-O-Lator. Members of the National Association of Stationary Engineers, assembled in convention at Los Angeles, visited the exhibit, as did the general public.

A. G. A. PUBLICATIONS REVIEW GAS CHEMISTRY SCIENCE

A comprehensive review of scientific progress affecting the manufactured gas industry is now available in chapters prepared by the Chemical Committee of the Technical Section of the American Gas Association. Each of the 17 chapters was prepared by a member of the committee, and printed in separate pamphlet form, although a limited number of bound valumes are available. Copies of the chapters and the bound volumes may be had by writing the American Gas Association, 420 Lexington Ave., New York, N. Y.

The titles of the chapters are given below :

Constitution of Coal; Physical and Chemical Properties of Coke in Relation to its Manufacture and Use; Carbonization of Coal; Water Gas Manufacture; Complete Gasification of Coal—Use of Oxygen for Gas Making; New Processes of Interest; Cleaning of Combustible Gases With Cottrell Electrical Precipitation Processes; Tar Refining and Tar Products; Light Oil Recovery and Refining; Recovering of By-Products Other Than Tar, Ammonia and Light Oil; Gas Purification; Corrosion; Materials of Construction; Blending Natural and Manufactured Gas; Recovery of Waste Heat in Gas Manufacture; Analytical Methods and Tests; Application of Physical and Physico-Chemical Research to Control Measurements in Gas Manufacture.

Some of the chapters sell at 30 cents apiece, others at 25 cents.

COLLINS BACK FROM SOUTH AMERICA

J. E. Collins, superintendent of service of the American Seamless Tube Corporation, has returned from a four months tour of South America where he has been servicing all American Seamless Tube Corporation Products being used by large operators in that country.

SERVICE CART SAVES TIME FOR SAN ANTONIO CREWS

San Antonio, Tex., Public Service Company has recently inaugurated the use of service carts to replace the former method of using a single truck for its service crew. Under the new method each service foreman has a cart equipped with all the tools and fittings necessary for his crew of men. This cart is attached by a special coupling to the service truck, and greatly facilitates the moves which the crew makes. The estimate of time saved by the service cart is given at one-half hour per crew per move, and in addition each foreman is better equipped for the required work. The new method also does away with many causes for accidents.

IDEAL FUEL HAS PART IN HONORING UNKNOWN SOLDIER

Gas had its share in the impressive ceremonies of the American Legion at Paris, France, when on September 17, Howard Savage, national commander, rekindled the flame—a gas flame—consecrating the tomb of the unknown soldier.

B. C. ELECTRIC DEVELOPES EMPLOYEE SALES

As a means of stimulating the activity of employees in selling the company's appliances and services the British Columbia Electric Railway Company, Ltd. has distributed "new business forms" on which the employees can fill in names of prospects for a given appliance. The forms were broadcasted with issues of "The B. C. Electric Employees' Magazine", the company publication.

GAS DEPT. OF PAN AMERICAN IN EVENING MEETING

On September 2 the gas department of the Pan American Petroleum Company held a dinner and meeting at Paulais Cafe, Los Angeles, attended by 69 members of the department. Motion pictures were shown of a fire demonstration on company properties, and H. L. Eggleston, manager of the gas department, gave a brief talk on Safety.

FEATURE STANDARD GASOLINE IN COMPANY PUBLICATION

"Standard Oil Bulletin", published by the Standard Oil Company of California, in its September issue devotes a number of pages to an account of its subsidiary, the Standard Gasoline Company, which operates as the Standard's natural gasoline department. A description is given, in layman's terms, of the process of extracting gasoline from natural gas, and there are a number of views of Standard Gasoline plants and equipment.

"ROAD SHOW" MAKES FRIENDS FOR PACIFIC POWER & LIGHT

Something else again in the field of public relations is the "Road Show" which has been successfully conducted since 1922 by the Pacific Power & Light Company, Portland, Ore. The show, which is under the direction of S. E. Skelley, manager of the company's investment department, is a happy combination of motion pictures, still pictures, and a talk accompanying them—all featuring the utility services, and featuring them in a broad, entertaining way, entirely free from propaganda. Through its experience "on the road" playing to capacity houses of gas and electricity users throughout the company's properties the show has proved its worth as a builder of friends.

TACOMA BOOKLET PUTS THE ROMANCE IN GAS

Attention of utility advertising men is directed to a booklet entitled "What Price Comfort in Your Home"—issued by the Tacoma Gas & Fuel Company in the interests of house heating by gas. The cover is done in three colors, and features a futuristic figure of a man, stoking solid fuel into a futuristic furnace. This treatment is a direct tie-in with outdoor advertising done by the company. Between the covers the book is quite on a par with the effective exterior, with many illustrations of gas heated homes of Tacoma, and goes a long way towards proving that romance can be injected into gas advertising when it is rightly gone about.

Ten Points *for* Trimming a Window

THE Window Display Advertising Association has made a wide survey of store windows, window trim material as offered by manufacturers, outstanding displays that have actually resulted in a volume of sales, and window stunts, including everything from demonstrations to mechanical pinwheels. They offer this lineup of Ten Points for guidance in window display. Gas appliance merchandising departments should keep in line with the best display practice, as outlined below:

1. Have an idea and make an effort to be different in carrying it out. Color, motion, drama make the display more interesting and attractive.
2. Display the merchandise to the best possible advantage.
3. Show the use of the goods whenever possible. This creates a desire for possession.
4. Tie up the display with local or national advertising of the merchandise featured. Put in the trim while the advertising campaign is in progress and use the same selling message or form of appeal in the window as appears in the advertising.
5. Always have a carefully worded selling message, or several of them, on posters or display cards, in every window.
6. Related articles may be used in the same window. Do not crowd, however.
7. Group the merchandise so that the eye can catch and study just a few objects at a time. This applies particularly to displays of small articles such as kitchenwares.
8. Light the various windows to avoid shadows by day and to make them stand out boldly by night.
9. Keep the glass spotlessly clean.
10. Back up the window display by a floor or table display inside the store, featuring the same merchandise so that the customer receives a follow-up impression upon entering.

NEW WESTMINSTER EXHIBIT

The gas division of the British Columbia Electric Power & Gas Co., Ltd., had an exhibit recently in the Industrial Building at the New Westminster Exhibition, displaying an installed radiant-type heater, an automatic gas water heater, a gas furnace with thermostatic control, a gas refrigerator, and hear-controlled gas ranges.

RATE REDUCTIONS

Reduction in the industrial gas rate in Drumright, Oklahoma, is shortly to be announced by the Southwestern Pipe Line and Utility Company, according to B. P. Stockwell, District Manager.

STANDARDS YEARBOOK

Standards Yearbook for 1926, issued by the U. S. Bureau of Standards, covers all essential elements of the standardization movement throughout the United States and incorporates the outstanding projects under consideration as international standards. The book sets forth the fundamental national standards, such as standards of length, mass, volume, time, electromotive force, resistance, inductance and capacity. It may be purchased from the Government Printing Office, Washington, D. C., where it is listed as M-No. 77.

CARBON BLACK IS IMPORTANT INDUSTRY SAYS U. S. B. OF M.

CARBON black, a material which comprises about 10 per cent of the weight of the hundred million automobile tires now whirling over the highways of the United States, is produced by approximately 60 plants located in 8 States, according to the United States Bureau of Mines, Department of Commerce. Production of the material is now proceeding at the rate of nearly two hundred million pounds per year.

Carbon black is a fluffy, velvety, black pigment, made by burning natural gas with insufficient air. Although it has been in use for about fifty years, it would still be comparatively unknown to all except ink manufacturers had it not been for the discovery of its use in rubber in 1915.

The chief uses of carbon black, in order of their importance, are as a filler in rubber and as a pigment in ink and in paints. It is also used in a number of miscellaneous products, such as stove polish, crayons, cement, paper and composition goods.

About two-thirds of the total output of carbon black is eventually used in rubber, its finely divided state being said to greatly reduce oxidation and increase the tensile strength.

Carbon black comprises about 10 per cent of the weight of the average tire.

Production of carbon black in 1925, the latest year for which statistics are available, amounted to 177,417,000 pounds. Production of the material received its greatest impetus in 1923, when the output was more than doubled in comparison with that of the preceding year.

Exports of carbon black have assumed considerable importance since 1923, when production first greatly exceeded demand. Exports in 1926 amounted to approximately 39,210,000 pounds, having a value of $3,622,000.

The carbon black industry, if it remains dependent on natural gas, will probably always be a nomadic westward-moving industry, but with three bright "stars" to follow—the presence of much unutilized gas in Texas and the Rocky Mountain district; the possibility that technology will reveal means to obtain higher yields without loss in quality; and the realization of the great utility of its product.

Further details regarding the economic phases of the carbon black industry are given in Information Circular 6033, by G. R. Hopkins, petroleum economist, copies of which may be obtained from the United States Bureau of Mines, Department of Commerce, Washington, D. C.

PEERLESS CONTROL CHANGES

Negotiations have been completed for a change of ownership in the controlling stock of the Peerless Heater Company of Pittsburgh, Pennsylvania, consolidating the sales and manufacturing activities of the company. General offices of the company have been moved from Pittsburgh to Boyertown, Pa.,, where Peerless Boilers have been manufactured for the past three years. New officers of the manufacturing firm are: Edwin M. Rhoads, president; Thomas King, vice-president; H. E. Gambrill, treasurer; B. W. Frederick, secretary.

GUYMON FRANCHISE AWARDED

The Texas County Gas Company has been given a franchise for furnishing natural gas to the town of Guymon, Oklahoma. A. J. Hardendorf and associates control the Texas County Gas Company. Gas will be in Guymon by November 20, if terms of the franchise are met.

Program Details *for* A. G. A. Sessions

(*Continued from Page 23*)

section is that of the chemical parallel sessions, arranged for Wednesday afternoon, October 12.

Only a reading of the program itself, which is published in full below, will convey an adequate idea of the thorough manner in which convention needs have been met. Nothing is said herein of entertainment, but that phase has by no means been neglected. And facilities at convention headquarters, the Hotel Stevens (an "all-gas" establishment of some 3000 rooms—the world's largest hotel), will leave nothing wanting. As an example of its completeness, the Exhibit Hall, where A. G. A. delegates will inspect the latest in gas equipment, cotains 35,000 square feet of available space, with every aid to effective display.

The 1927 Convention Program follows:

FIRST GENERAL SESSION

Tuesday Morning, October 11, 1927
10:00 o'clock

Opening Remarks—President, A. B. Macbeth, Southern Califoria Gas Company, Los Angeles, Calif.

Report—Treasurer, Clifford E. Paige, The Brooklyn Union Gas Company, Brooklyn, N. Y.

Report—Managing Director, Alexander Forward.

President's Address—"The Industry's Program," President, A. B. Macbeth.

Report—Nominating Committee, P. S. Young, Acting Chairman, Vice-President, The Public Service Electric & Gas Co., Newark, N. J.

Election.

Address—"The Laboratory—Today and Tomorrow," Ralph Gallagher, Chairman, Laboratory Managing Committee, East Ohio Gas Company, Cleveland, Ohio.

Address—"The Engineering and Economic Program of the Gas Industry," H. C. Abell, Vice-President, Electric Bond and Share Co., New York, N. Y.

In Memoriam—W. J. Clark, Vice-President, Westchester Lighting Company, Yonkers, N. Y.

Executive Session—(Only Company Member Delegates eligible to attend.)

SECOND GENERAL SESSION

Wednesday Morning, October 12,
10:00 o'clock

Address—"Essentials of Prosperity," James A. Emery, General Counsel, National Association of Manufacturers, Washington, D. C.

Address—"Are We Doing Enough to Do More?" Samuel Insull, President, The Peoples Gas Light and Coke Co., Chicago, Ill.

Report—Time and Place Committee, William J. Welsh, Chairman, President, New York & Richmond Gas Co., Stapleton, S. I., N. Y.

Address—"The Public Services," Honorable J. F. Shaughnessy, President, National Association of Railway and Utilities Commissioners, Carson City, Nevada.

Address—"Executive Interest in and Responsibility for Sales," W. A. Jones, Chairman of Executive Committee, Henry L. Doherty & Co., New York, N. Y.

Motion Picture—Showing of A. G. A. Resuscitation Film.

THIRD GENERAL SESSION

Thursday Morning, October 13,
10:00 o'cloc k

Reports—Presentation of General Committee Reports, Rate Fundamentals Committee, Judge Wm. L. Ransom, Chairman, Counsel, New York, N. Y.

Reports—Rate Structure Committee, Douglass Burnett, Chairman, Consolidated Gas, Electric Light and Power Co. of Baltimore, Md.

Reports—Accident Prevention Committee, E. S. Beaumont, Chairman, The Peoples Gas Light and Coke Co., Chicago, Ill.

Reports—Customer Ownership Committee, C. B. Stull, Chairman, The United Gas Improvement Co., Philadelphia, Pa.

Reports—Committee on Education of Gas Company Employees, B. J. Mullaney, Chairman, Vice-President, The Peoples Gas Light and Coke Co., Chicago, Ill.

Report—Committee on Co-operation with Educational Institutions, W. Griffin Gribbel, Chairman, J. J. Griffin & Company, Philadelphia, Pa.

Address—"The Executive and the Industrial Load," Clifford E. Paige, Vice-President, The Brooklyn Union Gas Company, Brooklyn, N. Y.

Address—"The New American Tempo," Robert R. Updegraf, Associate Editor, Magazine of Business, New York, N. Y.

Report—Report of Committee on President's Address.

Presentations—Award of Beal Medal, T. R. Beal, President, Central Hudson Gas & Electric Corporation, Poughkeepsie, N. Y.

Presentation—Award of McCarter Medals for Life Saving, Thomas N. McCarter, President, The Public Service Electric and Gas Company, Newark, N. J.

Presentation—Award of the A. G. A. Meritorious Service Medal, A. B. Macbeth, President.

Report—Committee on Resolutions.

Address—"The Elimination of Fatigue," Dr. Lillian Gilbreth, Consulting Engineer, Montclair, N. J.

Closing Remarks—"Passing Another Milestone," Arthur Hewitt, Vice-President and General Manager, Cosumers' Gas Company, Toronto, Canada.

ACCOUNTING SECTION

Tuesday Afternoon, October 11,
2:00 o'clock

Opening Remarks—Chairman, A. L. Tossell, The Peoples Gas Light & Coke Company, Chicago, Illinois.

Report—Nominating Committee, DeWitt Clinton, Chairman, Worcester Gas Light Company, Worcester, Mass.

Election.

Report—Exhibit Committee, Sidney Curren, Chairman, The Public Service Electric & Gas Company, Newark, N. J.

Report—Advisory Committee on A. G. A. Statistics, W. A. Sauer, Chairman, The Peoples Gas Light & Coke Company, Chicago, Illinois.

Report—Budget—The Promise and Performance, Edward Porter, Chairman, The United Gas Improvement Company, Philadelphia, Pa.

Address—"The Accountant and His Big Job in the Gas Industry," Samuel Insull, Jr., President, Midland Utilities Company, Chicago, Illinois.

Report—Committee on Relations With Customers, J. M. Roberts, General Chairman, The Peoples Gas Light & Coke Company, Chicago, Illinois.

Part I—Report on Supplying Gas Without Signed Applications, R. S. Holden, Chairman, Public Service Co. of Northern Illinois, Chicago, Illinois.

Report—Insurance Committee—A. J. Metzel, Chairman, The United Gas Improvement Company, Philadelphia, Pa.

Report—Committee on Cost Accounting Practices for Repairing and Recording Meters, F. H. Patterson, Chairman, Rochester Gas & Electric Corporation, Rochester, N. Y.

Wednesday Afternoon, October 12,
2:00 o'clock

Report—Committee on Relations with Customers—Part 2—Meter Reading Practices and Remuneration, G. A. Burrows, Chairman, Consolidated Gas Company of New York, New York, N. Y.

Report—Committee on Customers Accounting and Development of Bookkeeping Machines, J. L. Conover, Chairman, The Public Service Electric & Gas Co., Newark, N. J.

Address—Simplified System of Customers Accounting of The Peoples Gas Light & Coke Company, Paul H. Myers, Business Research Corporation, Chicago, Illinois.

Report—Committee on Statistics and Cost Analysis, G. E. McKana, Chairman, The Peoples Gas Light & Coke Company, Chicago, Illinois.

Thursday Afternoon, October 13,
2:00 o'clock

Report—Committee on State Representatives, Edward Porter, Chairman, The United Gas Improvement Company, Philadelphia, Pa.

Report—Committee on Cost of Operating Motors and Mechanical Equipment Used in Distribution Work, J. H. Smith, Chairman, The United Gas Improvement Co., Philadelphia, Pa., and M. F. Reeder, Vice-Chairman, The Peoples Gas Light & Coke Co., Chicago, Illinois.

Report—Committee on Uniform Classification of Accounts, W. J. Meyers, Chairman, United Electric Light & Power Co., New York, N. Y.

Address—"Fixed Capital Records," James H. Walker, Valuation Engineer, Chicago, Illinois.

Report—Committee on Relations With Customers—Part 3—Customers' Good Will, S. A. Hill, Chairman, The Peoples Gas Light & Coke Co., Chicago, Illinois.

Address—"Review of Accounting Section Activities," J. W. Heins, Philadelphia Suburban-Counties Gas & Electric Co., Philadelphia, Pa.

Open Forum.

COMMERCIAL SECTION

Tuesday Afternoon, October 11,
2:00 o'clock

Opening Remarks—Chairman, J. J. Burns, Laclede Gas Light Co., St. Louis, Mo.

Report—Nominating Committee, R. J. Canniff, Chairman, Standard Gas Equipment Corp., Chicago, Ill.

Paper—"Are We Anywhere Near Saturation?" R. M. Searle, President, Rochester Gas & Electric Corp., Rochester, N. Y.

Paper—"What's Ahead in Domestic Cooking?" Geo. E. Whitwell, Chairman, Domestic Cooking Committee, Equitable Gas Co., Pittsburgh, Pa.

Paper—"The Importance and Use of Commercial Statistics," T. H. Brown, Professor Business Statistics, Harvard School of Business Administration, Cambridge, Mass.

Paper—"Large Volume Water Heating," H. J. Long, The Kompak Company, New Brunswick, N. J.

Paper—"Sales Possibilities in the Domestic Laundry," A. M. Evans, Chairman, Domestic Laundry Equipment Committee, Federal Electric Company, Chicago, Ill.

Paper—"1927 Developments in Gas Refrigeration," H. D. Valentine, Chairman, Refrigeration Committee, Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y.

Wednesday Afternoon, October 12, 2:00 o'clock

Paper—"What Do Rates Mean to a Commercial Department?" T. F. Kennedy, Manager, New Business Department, Henry L. Doherty & Company, New York, N. Y.

Paper—"House Heating Developments During the Past Year," H. Leigh Whitelaw, Chairman, House Heating Committee, Vice-President, American Gas Products Corp., New York, N. Y.

Symposium—"The Influence of Salesmen's Compensation on Load Building," E. R. Acker, Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y.
J. H. Hartog, Portland Gas and Coke Co., Portland, Ore.
Stanley Jenks, Public Service Co. of Northern Indiana, Hammond, Ind.
P. B. Wiske, The Brooklyn Union Gas Co., Brooklyn, N. Y.
John G. Learned, Public Service Co. of Northern Illinois, Chicago, Ill.

Paper—"What You Go After You Get," Mrs. Anna J. Peterson, Home Service Director, The Peoples Gas Light & Coke Co., Chicago, Ill.

Thursday Afternoon, October 13, 2:00 o'clock

Paper—"The Commercial Value of the Testing Laboratory," Alfred Hurlburt, Vice-President, Equitable Gas Co., Pittsburgh, Pa.

Paper—"The Blue Star Plan Today," R. J. Canniff, Chairman, Blue Star Committee, Standard Gas Equipment Corp., Chicago, Illinois.
A. E. Higgins, Field Representative, Commercial Section, A. G. A.

Paper—"Advertising for Greater Sales," J. R. Pershall, Public Service Co. of Northern Illinois, Chicago, Illinois.

Symposium—"Co-operative Merchandising,' J. E. Davies, The Peoples Gas Light & Coke Co., Chicago, Ill.
G. M. Karshner, Consolidated Gas Co. of New York, New York, N. Y.
H. D. Valentine, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
F. F. Capen, Boston Consolidated Gas Co., Boston, Mass.

Paper—"Selling Incineration," W. R. Lacey, Chairman, Incineration Committee, Home Incinerator Co., Milwaukee, Wis.

INDUSTRIAL GAS SECTION

Tuesday Afternoon, October 11, 2:00 o'clock
Manager's Day

Address—Chairman, H. O. Loebell, Combustion Utilities Corp., New York, N. Y.

Paper—"Merchants Needed In the Gas Industry," Philip Cabot, Harvard Business School, Cambridge, Mass.

Paper—"What Can Be Done to Accelerate the Industrial Gas Load?" J. G. Learned, Public Service Co. of Northern Illinois, Chicago, Ill.

Paper—"Value of Survey to Management," G. I. Vincent, Syracuse Lighting Co., Syracuse, N. Y.

Report—Survey Committee, R. L. Manier, Chairman, Syracuse Lighting Co., Syracuse, N. Y.

Paper—"Servicing Industrial Customers," A. M. Apmann, Consolidated Gas Co. of New York, New York, N. Y.

Report—Competitive Fuels Committee, R. H. Staniford, Chairman, The Brooklyn Union Gas Co., Brooklyn, N. Y.

Report—Education of Personnel Committee, J. P. Leinroth, Chairman, Public Service Electric & Gas Co., Newark, N. J.

Wednesday Afternoon, October 12, 2:00 o'clock

Report—Nominating Committee, H. H. Clark, Chairman, United Public Service Co., Chicago, Ill.

Report—Policy Committee, F. C. Mackey, Chairman, Public Service Co. of Northern Illinois, Chicago, Ill.

Report—Rate Committee, E. L. Wilder, Chairman, Rochester Gas & Electric Corp., Rochester, N. Y.

Paper—"Resume of Outstanding Industrial Gas Installations Made During Year," (illustrated with lantern slides), H. A. Clark, Detroit City Gas Co., Detroit, Mich.

Report—Sales Methods Committee, K. Emmerling, Chairman, The East Ohio Gas Co., Cleveland, Ohio.

Report—Advertising Committee, J. F. Weedon, Chairman, The Peoples Gas Light & Coke Co., Chicago, Ill.

Paper—"Contact With Furnace Manufacturers," N. T. Sellman, Consolidated Gas Co. of New York, New York, N. Y.

Report—Publicity Committee, H. O. Andrew, Chairman, Robbins Publishing Co., New York, N. Y.

Report—Speakers' Bureau, H. H. Smith, Chairman, Boston Consolidated Gas Co., Boston, Mass.

Thursday Afternoon, October 13, 2:00 o'clock

Report—Hotel and Restaurant Sales Promotion Committee, W. DeFreitas, Chairman, Consolidated Gas Co. of New York, New York, N. Y.

Report—Display and Contact With National Industrial Organizations Committee, D. W. Chapman, Chairman, The Peoples Gas Light & Coke Co., Chicago, Ill.

Report—Industrial Gas Research Committee, N. T. Sellman, Chairman, Consolidated Gas Co. of New York, New York, N. Y.

Report—Research Committee, W. D. Thompson, Chairman, The Laclede Gas Light Co., St. Louis, Mo.

Paper—"Forging," W. M. Hepburn, Surface Combustion Co., Toledo, Ohio.

Paper—"Gas Economics of Brass Melting," (illustrated with lantern slides), J. F. Quinn, The Brooklyn Union Gas Co., Brooklyn, N. Y.

Paper—"Eameling," (illustrated with lantern slides), W. D. Thompson, The Laclede Gas Light Co., St. Louis, Mo.

Report—Progress Committee, H. A. Clark, Chairman, Detroit City Gas Co., Detroit, Mich.

Report—Contact with Technical Bodies Committee, H. H. Clark, Chairman, United Public Service Co., Chicago, Ill.

INDUSTRIAL GAS SALES CONFERENCE

H. O. LOEBELL, Chairman

Monday Evening, October 10, 8:00 o'clock

Paper—"Surveys and How to Use Them," R. L. Manier, Syracuse Lighting Co., Syracuse, N. Y.

Paper—"Methods of Establishing Budgets or Quotas for Industrial Gas Departments," C. C. Krausse, Consolidated Gas, Electric Light & Power Company of Baltimore, Baltimore, Md.

Paper—"Salesmen's Reports," D. W. Chapman, The Peoples Gas Light & Coke Co., Chicago, Illinois.

Symposium—Industrial Gas Sales Methods.

INDUSTRIAL INSPECTION TRIPS

To Be Made During the American Gas Association Convention

Arrangements by D. W. Chapman, The Peoples Gas Light & Coke Co., Chicago, Ill.

Inspection Trips will start from the Peoples Gas Building, 122 South Michigan Avenue, at the time specified, which in all cases is Central Standard time.

Monday, October 10, 8:30 A. M.

Via auto to the Deering Works of the International Harvester Company, to inspect the following installations:

Brass melting (non-crucible).
Forging (rod end forges).
Core baking (truck type oven).
Hardening (continuous).
Tempering (Heat-Rite recirculating).

Via auto to the plant of Pettibone Mulliken Company to inspect core baking and annealing installations.

12:30 P. M.—Luncheon.

1:30 P. M.—Via auto to the McCormick Works of the International Harvester Company to inspect the following:

Carbonizing (oven type).
Forging (rod end forge).
Heat Treating (continuous and oven).

Wednesday, October 12, 8:30 A. M.

Via auto to the plant of the Kedzie Foundry to inspect mould drying installation; then to the Liquid Carbonic Company to see crucible type brass melting furnaces.

Friday, October 14, 8:30 A. M.

Via auto to the West Pullman plant of the International Harvester Company to inspect the following installations:

Carbonizing (compensating).
Carbonizing (rotary).
Forging (rotary hearth).
Hardening (continuous).
Heat Treating (rotary hearth).
Rivet Heating (high pressure).
Tempering Bearings (immersion drawing).

12:30 P. M.—Luncheon.

1:30 P. M.—Via auto to the plant of Crane Company to inspect the following installations:

Core Baking (continuous type).
Galvanizing (surface combustion H.P.).

MANUFACTURERS' SECTION

Monday Afternoon, October 10, 2:00 o'clock

Opening Remarks—Chairman, W. E. Steinwedell, The Gas Machinery Co., Cleveland, Ohio.

Report—Nominatig Committee, W. E. Dedwent, Chairman, Geo. D. Roper, Corp., Rockford, Ill.

Election.

Paper—"Laboratory Developments," R. E. Conner, Director, A. G. A. Testing Laboratory, Cleveland, Ohio.

Reports—Division Chairmen.
Gas Manufacturing and Auxiliary Equipment, F. G. Curfman, The Improved Equipment Co., New York, N. Y.
Distribution Equipment, E. S. Dickey, Maryland Meter Works, Baltimore, Md.
Utilization Appliances, R. C. Hoffman, Jr., Standard Gas Equipment Corp., New York, N. Y.

Mechanical Office Equipment, A. S. Trew, Burroughs Adding Machine Co., Detroit, Mich.
New Business.

PUBLICITY AND ADVERTISING SECTION

National Symposium of Public Utility Executives

Wednesday Afternoon, October 12, 2:30 o'clock

Opening Remarks—Chairman, Harlow C. Clark, The Public Service Electric and Gas Co., Newark, N. J.
Report—Nominating Committee, Frank L. Blanchard, Chairman, Henry L. Doherty & Company, New York, N. Y.
Election.
Address—"The Public Interest in Transportation," R. H. Aishton, President, American Railway Association, Chicago, Ill.
Address—"Space Grabbing in the Newspapers," B. J. Mullaney, Vice-President, The Peoples Gas Light & Coke Co., Chicago, Ill.
Address—"The Financial Stability of the Public Utility Industry," Henry S. Hayes, Investment Bankers Association of America, New York, N. Y.
Address—"The True Functions of Government," Cornelius J. Doyle, Associate General Counsel, National Board of Fire Underwriters, Springfield, Ill.
Note: This meeting is open to everyone affiliated with the public utility industry.

TECHNICAL SECTION

Tuesday Afternoon, October 11, 2:00 o'clock

Opening Remarks—Chairman, W. C. Beckjord, American Light and Traction Co., New York, N. Y.
Report—Nominating Committee, J. P. Hoftenkamp, Chairman, Rochester Gas and Electric Corp., Rochester, N. Y.
Election.
Report—Committee on Engineering and Economic Survey, H. E. Bates, Chairman, The Peoples Gas Light & Coke Co., Chicago, Ill.
Report—Sub-committee on Research in Mixed Gases, F. C. Weber, Chairman, The Brooklyn Union Gas Co., Brooklyn, N. Y.
Paper—"Tests on Effect of Thermal Content, Specific Gravity, etc., on the Utilization of Various Gases and Mixtures Thereof," G. B. Shawn, A. G. A. Testing Laboratory, Cleveland, Ohio.
Paper—"Mixed Gas from the Standpoint of Plant Operation," J. A. Perry, The United Gas Improvement Co., Philadelphia, Pa.
Report—Subcommittee on Adjusting Present or Possible Future Production Methods to Plant Load Characteristics, L. J. Willien, Chairman, Byllesby Engineering & Management Corp., Chicago, Ill. (Contribution of Carbonization and Water Gas Committees.)
Report—Subcommittee on Cost and Method of Providing for a Gas House Heating Load Equal to Present Maximum Sendout on Distribution System, M. I. Mix, Chairman, The Peoples Gas Light & Coke Co., Chicago, Ill.
Report—Subcommittee on Problem B—Economics of Supplying Outlying Sections of a Distribution System, O. S. Hagerman, Chairman, American Light and Traction Co., New York, N. Y.
Report—Subcommittee on Problem C—Economics of Long Distance High-Pressure Transmission of Gas, F. A. Lydecker, Chairman, The Public Service Electric & Gas Co., Newark, N. J. (Contribution of Distribution Committee.)

Wednesday Afternoon, October 12, 2:00 o'clock

Report—Subcommittee on New Processes—Directly or Indirectly Concerned with the Production of Gas, A. C. Fieldner, Chairman, Bureau of Mines, Washington, D. C. (Contribution of Chemical Committee.)
Paper—"Developments in Water Gas Operation," L. J. Willien, Byllesby Engineering & Management Corp., Chicago, Ill., and Louis Stein, Northern States Power Co., Minneapolis, Minn.
Report—Water Gas Committee, Henry Fink, Chairman, Detroit City Gas Co., Detroit, Mich.
Paper—"Some European Developments," G. M. Gill, Consulting Engineer, London, England.
Report—Chemical Committee, W. H. Fulweiler, Chairman, U. G. I. Contracting Co., Philadelphia, Pa.

Thursday Afternoon, October 13, 2:00 o'clock

Report—Distribution Committee, C. C. Simpson, Chairman, Consolidated Gas Co., of New York, New York, N. Y.
Report—Pipe Joints Committee, J. D. vonMaur, Chairman, Consumers Gas Company of Toronto, Toronto, Ont., Canada.
Report—Carbonization Committee, R. G. Porter, Chairman, Philadelphia Surburban Counties Gas & Electric Co., Chester, Pa.
Report—Plant Test at Stamford, Conn., Prof. J. T. Ward, Chairman, Massachusetts Institute of Technology, Cambridge, Mass.

CHEMICAL PARALLEL SESSIONS

Wednesday Afternoon, October 12, 2:00 o'clock

Report—Chemical Committee, W. H. Fulweiler, Chairman, The U. G. I. Contracting Co., Philadelphia, Pa.
Paper—"Constitution of Coal in Relation to Spontaneous Combustion," Dr. W. Francis, British Safety in Mines Research Board, Sheffield, England.
Paper—"Coking and Swelling Constituents of Coal," Prof. R. T. Haslam, Massachusetts Institute of Technology, Cambridge, Mass.
Paper—"Relation of Fusibility of Coal Ash to Clinker Formation," Bureau of Mines.

Thursday Afternoon, October 13, 2:00 o'clock

Paper—"Effect of Method of Carbonization of Coal Tars," S. R. Church, Consulting Engineer, New York, N. Y.
Symposium—Naphthalene Determination, By members of U. G. I. staff, Philadelphia; Consolidated Gas, Electric Light & Power Co., of Baltimore; U. S. Bureau of Mines, and others.
Symposium—Organic Sulphur Compounds in Gas, W. J. Huff, Johns Hopkins University; N. F. Prince, Rochester Gas & Electric Corp.; Koppers Company Laboratory, and others.

HOME SERVICE COMMITTEE

Tuesday Afternoon, October 11, 2:00 o'clock

Lecture—
Demonstration — Luncheon Menu, Miss Frances Lauder, Battle Creek Gas Co., Battle Creek, Mich.
School Talk—"Do You Know the Value of Home Service?" Grace R. Preston, Erie Stove and Mfg. Co., Erie, Pa.

Wednesday Afternoon, October 12, 2:00 o'clock

Lecture Demonstration—Dinner Menu, Ara Mixter, Luzerne County Gas and Electric Co., Kingston, Pa.
School Talk—"The Particular Problems of Natural Gas," Mrs. Flora B. Frey, East Ohio Gas Co., Cleveland, Ohio.

Wednesday Afternoon, October 12, 5:15 o'clock

Informal meeting of executives interested in home service.
Address—"Home Service in the Gas Industry," P. D. Warren, The Peoples Gas Light and Coke Co., Chicago, Ill.
Playlet—"Fifteen Minutes of Home Service —A Good Way to Start the Day Right."

Thursday Afternoon, October 13, 2:00 o'clock

Lecture—
Demonstration—Supper Menu, Miss Daurice Darling, Boston Consolidated Gas Co., Boston, Mass.
School Talk—"Growing Up with the Gas Idea," Miss May A. Bennett, The East Ohio Gas Co., Cleveland, Ohio.

WOMEN'S MEETING

Thursday Morning, October 13, 10 o'clock

Miss Julianne Doane, Chairman

Opening Remarks—Miss Julianne Doane, Dean of Women, The Peoples Gas Light and Coke Co., Chicago, Ill.
Address—E. B. Luce, Consolidated Gas, Electric Light and Power Co., of Baltimore, Md.
Address—Miss Julie Pailet, New Orleans Public Service Inc., New Orleans, La.
Address—Miss Marie Sellers, Postum Company, New York, N. Y.
Address—Miss Grace Jo Mason, Federal Light and Traction Co., Tucson, Ariz.
Address—Miss K. A. Booth, The Peoples Gas Light and Coke Co., Chicago, Ill.

PEAK LOADS ARE BALANCED ON COAST COUNTIES SYSTEM

THE Coast Counties Gas and Electric Company, serving as part of its territory the two cities of Santa Cruz and Watsonville, Calif., enjoys a unique situation in regard to peak loads, and one that simplifies to a large extent the problem of adequate capacity without the necessity of any large stand-by investment.

Santa Cruz, a California resort town on the Monterey bay, is largely a summer resort. The result is that during the months of June, July, and August, the town is filled to capacity, and gas consumption reaches its maximum at that time. Watsonville, on the other hand, being a normal interior town, with a stable population, makes its maximum demand for gas during the winter months.

It is to take advantage of this unique situation that the 20-mile six-inch line of the Coast Counties has been constructed, and just completed, between the two points. The Santa Cruz plant has been tied into the Watsonville distribution system, and will assist the latter plant in keeping abreast of the winter demand. This will be sufficient for this year, but it is felt that the normal growth of population in the territory will necessitate increased capacity at the Santa Cruz gas plant next summer.

OFFICE MOVED

The Volz Engineering Equipment Company has moved its main offices from Los Angeles to 3732-3734 E. 7th St., Long Beach, California.

SAN FERNANDO OFFICE

The Southern California Gas Company's district office in San Fernando was opened on September first.

With *the* Metermen

September Session *of* S. C. M. A. Well Attended

A STEADILY mounting attendance at monthly meetings is registering the accumulating interest of men concerned with problems of gas measurement in the work of the Southern California Meter Association. On September 22 a group of 92 men representing gas transmission companies, gas distributing companies, and natural gasoline and petroleum companies in Southern California, gathered at the Breakers Hotel, Long Beach, for the third meeting of the Association.

Members put in their appearance at an early hour, arrangements having been made to get the Dempsey-Tunney fight returns direct from ringside by radio. A dinner was served at 6:45 p. m., with a program of papers and discussion following. T. K. M. Smith, president of the organization, was in charge of the meeting.

"Calibrating Differential Recording Gauges on Pressure Lines with the Improved Manometer" was the title of a short paper and demonstration by H. Jimenez of the Midway Gas Company. The apparatus used by Mr. Jimenez in illustrating his paper is shown on this page in diagram, together with the text of his paper.

Ralph Cook, also of the Midway Gas Company, spoke interestingly of "The 'Ranarex' Specific Gravity Recording Instrument," describing this equipment and telling of his company's experiences with one of the instruments. Discussion from the floor followed both papers, the speakers answering questions raised by the members.

Next Meeting Date *for* Meter Group is Oct. 27

October 27 is the next meeting date for the Southern California Meter Association, meetings being held on the fourth Thursday of each month. The Breakers Hotel, Long Beach, where the September meeting was held, will be headquarters again.

B. M. Laulhere of the Midway Gas Company, and vice-president of the Association, will preside at the October session, in the absence of T. K. M. Smith, president, who is spending a few weeks in Honolulu, T. H., his former home.

Notification of the October 27 meeting will be sent members by R. N. Brown of the Union Oil Company, secretary of the gas measurement group.

Members of the Southern California Meter Association, and others interested in gas measurement problems, will read with interest the paper of M. J. Cereghino, on "Mercury for Use in Orifice Meters," presented at the August meeting of the Association, and published on another page of this month's *Western Gas*.

SPENDING $1,500,000

A construction program aggregating $1,500,000 by the Kansas City Gas Co., the Wyandotte County Gas Co., and the Kansas Natural Gas Co., now under way in and around Kansas City, Mo., and Kansas City, Kansas, is expected to be completed about January 1, 1928.

Calibrating Differential Recording Gauges *on* Pressure Lines *with the* Improved Manometer

By H. JIMENEZ
Midway Gas Company

THE use of the U gauge is the original method used to determine the differential or drop in pressure through an orifice disk and the differential recording gauge is an instrument developed to record this differential pressure. Since the use of recorders has become universal where accurate measurement is required it is therefore necessary to have the recording gauge calibrated with a U gauge or a water column having a range equal to the limit of the recording gauge to be calibrated, the most common in use being from 0 to 50-inch differential. The U gauge or water column

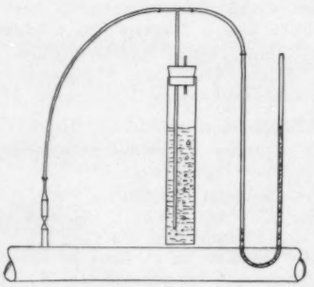


Fig. 1

should have a rule which has been carefully checked, graduated in inches and tenths. This will correspond to the graduation on the charts used on differential recording gauges.

To calibrate a differential recording gauge connected to pressure lines, the gauge is put out of service, allowing the gas or air to escape to atmosphere, thus making sure that there is no pressure on either side of the gauge. One end of the U gauge is connected to the high side of the recording gauge, and the other end open to atmosphere; the low side of the recording gauge is also opened to atmosphere by removing the ⅛-inch plug on the cover, or a ¼-inch plug on the low side of the gauge line connection, or better still removing the cover from low pressure chamber. When this has been done the differential pen should be adjusted to the zero position. Referring to the by-pass on the recording gauge connections, (which consists of three valves, one on the high side, one on the low side, and the other, which opens to the atmosphere, between these two) open the valve to atmosphere, and open also the valve on the high side, closing the valve on the low side. Then slightly open valve that takes off from the meter tube on the up stream side of the orifice flange. When this is done a pressure will be exerted on the mercury in the high pressure chamber of the recording gauge and on the U gauge. This valve should be opened only enough to exert a pressure on the high side chamber equivalent to approximately 4 per cent of the range to be calibrated or about two inches differential on a 50-inch gauge. By partially opening or closing the valve on high side of the by-pass the pen arm can be made to travel up or down to any point on the chart and checked with the reading on the manometer.

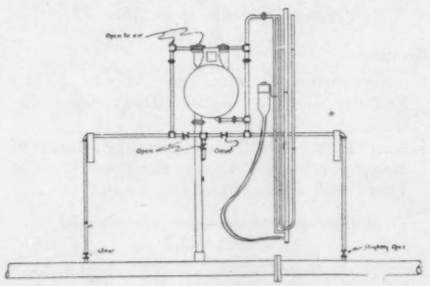


Fig. 2

At this point I want to show the advantage of calibrating a differential recording gauge with the improved manometer which I have used for some time in shop and field work. The height of the column on the manometer is controlled by means of a pressure regulator or a device that maintains a steady pressure on the recording gauge and manometer. It is built in connection with a 50-inch manometer or any other standard water column. To illustrate the principle of the regulator, refer to Fig 1 which shows a jar filled with water with a tube inserted and extending nearly to the bottom. The other end of this tube is connected by means of a tee to the source of supply and to one side of the manometer or water column. When a pressure is admitted from the source of supply, sufficient to exceed the pressure caused by the submergence of the tube, the gas or air will bubble through the water and maintain a steady reading on the manometer. In other words the depth the tube is submerged controls the pressure maintained on the manometer.

Applying this method of pressure control to the improved nometer, see Fig. 2. The ¾-inch pipe used to support the manometer is sealed at the bottom and it is utilized to take the place of the jar. A ⅛-inch pipe runs the full length on the outside of the ¾-inch pipe and is connected to it about two or three inches from the bottom. The top end is connected to a tee where one end is connected to the manometer and the other to the source of supply. This takes the place of the small tube in the jar, in Fig. 1. A ⅛-inch tap is made in the ¾-inch pipe about 1½ inches from the lower end. This is connected by means of a rubber hose to a small reservoir which provides the necessary water for maintaining the desired height of the water column on the manometer and by raising or lowering the reservoir any desired reading on the column may be maintained. Connecting the end from the source of supply to the high side of the recording gauge, and while the by-pass valves are opened and the differen-

tial pen rests at zero let in enough pressure to raise the differential pen about two inches. Then close the by-pass valves and leave them closed; then cut down on the source of supply valve, as it takes very little pressure or leakage to operate from here on. The height of the column on the manometer is controlled by means of the pressure regulator and by raising or lowering the reservoir, any desired height on the column may be maintained. By placing the reservoir at a certain level, say 25 inches, the gauge can be made to rest at zero by shutting off the source of supply valve and opening the by-pass valves; then making the necessary adjustments, set to zero. Proceed with the operation of supplying pressure and the column of water will rise to the 25 inches.

The regulation at the higher ranges is just as easy and positive and the operator need not be afraid of blowing the water from the manometer.

Another advantage with this system of control is in calibrating a gauge on a pulsating line. You all know the difficulty of controlling a certain position on the manometer and holding it long enough to check the recording gauge, especially where the pressure varies. The amount of pressure required to calibrate to 50 inches is a little under two pounds pressure per square inch and any excess pressure above that is taken care of in the regulator by allowing the excess to escape through the water.

P. G. AND E. IN HOUSE HEATING

The Pacific Gas and Electric Company, through its San Francisco Division, has recently gone actively into the house heating field through the appointment of F. L. MacKinnon as house heating engineer for that territory. The company now not only advises on house heating problems, but designs and installs systems of steam, vapor, hot water or warm air, depending on the peculiar requirements of the job on hand. Great emphasis is being laid on the necessity of quality work, as it was this essential factor which influenced the utility to enter the heating business. Ray Trowbridge, supervisor of gas sales for the San Francisco Division, is in general charge of all activities in this department, and predicts that within a short time it will be expanded to include more salesmen specializing in house heating.

COOKING SCHOOLS IN CONTRA COSTA COUNTY

Cooperating with the Coast Counties Gas and Electric Company, the H. R. Basford Company is loaning a Tappan range for use in a series of cooking schools that are being given in the Contra Costa county towns of Antioch, Pittsburg, Concord, Crockett and Martinez. One week in each town the domestic science experts lecture to the assembled housewives, demonstrating to them on the range, and assisting them in all of their culinery problems.

An innovation that is being tried out as a sales stimulant, is the presenting of a $6 kitchen clock with every range bought. The clock has a minute and hour alarm hand, and is designed to facilitate the proper timing of food in preparation.

The campaign in every instance is being backed up by newspaper advertising and by handbills distributed from door to door. Figures on the actual number of sales have not yet been tabulated as the campaign is still in progress. However, general agent Morris F. Wales predicts that in all communities sales will run well over the quota set.

A. G. A. Laboratory *to* Have New Building

WHILE attending the Pacific Coast Gas Association sessions at Santa Cruz, Calif., R. M. Conner, director of the American Gas Association Laboratory at Cleveland, received a telegram from A. G. A. headquarters, announcing the passing of another important milestone in the Laboratory program. The message read:

September 14, 1927.

R. M. Conner,
Hotel Casa del Rey,
Santa Cruz, Calif.

"Executive board unanimously approved new building for Laboratory."

(Signed) Alexander Forward.

Plans for the new and larger Laboratory structure were prepared under the direction of the Laboratory Managing Committee, of which R. W. Gallagher, president of the East Ohio Gas Company, is chairman, and were submitted to a special A. G. A. committee. Their unanimous approval by this committee, was followed by the Executive Board's action authorizing the important step.

Work on a new two story structure will start within a short time, and by September 30, 1928, it is hoped all research and testing activities of the Laboratory will be housed in a new efficiently arranged building containing more than 21,000 square feet. The estimated expenditure, including the removal of the present equipment to the new building, will approximate $145,000.

At the present time the Laboratory occupies, for office, storage, and testing purposes, approximately 12,000 square feet of floor space. According to estimates, about 20,000 square feet will be necessary by 1930, and the new building is being planned to adequately care for demands for the next three years, with provision made for the addition of an additional floor if it be needed in the future.

Manufacturers will benefit materially from the new building, according to Mr. Conner. Whereas in the past a small work room has been set aside for manufacturers to work in, as many as ten representatives a day call in connection with the testing of their products. Some of them wish to connect their appliances and make the corrections required without having to incur the expense of sending the appliances back to the factory, and to eliminate loss of time. Ample space will be provided in the new building for this purpose. This service, say A. G. A. officials, is the forerunner of a more important service when a department will be started for manufacturers to use as an experimental station.

The new building will be erected on ground near the present building in Cleveland, Ohio. The site will be purchased from the East Ohio Gas Company, which has given the Laboratory such splendid assistance in the past two years. The structure will be of brick construction, with face brick used throughout the front wall. The main support for the floors will be structural steel.

Gas holders and other facilities donated by the East Ohio Gas Company will still be utilized by the Laboratory.

BILLION BARREL CONSUMPTION

Crude oil consumption in the United States for the fiscal year 1927-28 is estimated at 1,000,000,000 barrels.

NEW COMPANY SECURES GAS CHARTER IN OKLAHOMA

The United Gas Service Company is the name of the company organized by C. E. Burlingame and associates of Bartlesville, Okla., which has applied for franchises to distribute natural gas in Woodward, Alva, Waynoka, and other towns and cities in Oklahoma, as well as Miami, Texas, Anthony, Kiowa, Conway Springs and Harper, Kans. This company proposes to take its gas from the Kansas-Texas line of the Empire Companies, which is to be completed about January 1, 1928. The charter for this company was granted September 7. Officers of the company are C. E. Burlingame, president and general manager; L. A. Rowland, Bartlesville, vice-president, and W. L. Watkins, Bartlesville, secretary and treasurer.

A franchise has already been granted to this company at Arnett, Okla. Franchises will be voted in the next few weeks in a number of other towns on the route of the Kansas-Texas line, which is being pushed steadily and rapidly toward completion.

PORTLAND COMPANY PUBLISHES HOT WATER HANDBOOK

A handbook on hot water supply service has recently been originated by the Portland Gas and Coke Company. It is a 28 page booklet, bound in a heavy paper cover and containing a large amount of valuable information on water heaters, their proper installation and care. The table of contents includes subjects such as: Water, Tank Heaters, Semi-automatic Heaters, Small Storage Heaters, Instantaneous Heaters, Large Storage Heaters, Circulating Systems, Discharge from Faucets, Flow of Water in Pipes, Pipe Data, Tank Data, Hot Water Consumption, Troubles and Remedies, Rules for Designing, Common Faults in Design, Model Specifications, Flow of Gas in Pipes.

Feeling that the Handbook, covering as it does the water heating situation in such a general way, might be of use to other gas companies, the Portland Gas and Coke Co. has ordered the printer to hold the forms and notified Clifford Johnstone, executive secretary of the Pacific Coast Gas Association, that the books can be secured at a nominal cost with any company's name imprinted upon them.

NATIONAL FUELS MEETING

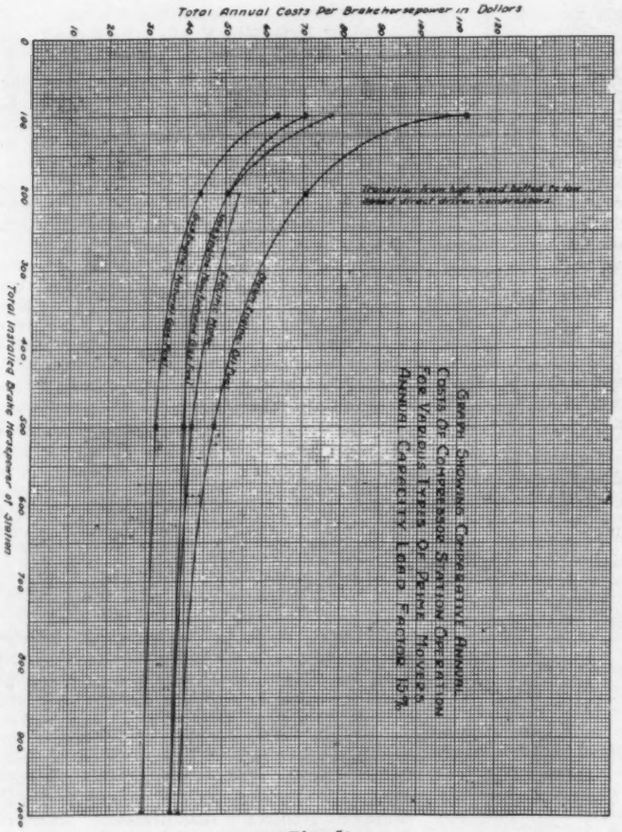
A number of features on the program of the first national fuels meeting of the American Society of Mechanical Engineers, Fuels Division, at St. Louis, Mo., October 10, 11, 12 and 13, promise to interest gas men. The program is directed toward engineers and organizations interested in the use and conservation of fuels. St. Louis is a happy choice for such a conference, as it has under way the most comprehensive smoke abatement campaign in the country. The four major divisions of the conference program are: General; Industrial; Power Plant; Smoke Abatement.

ARTESIA GIVES FRANCHISE

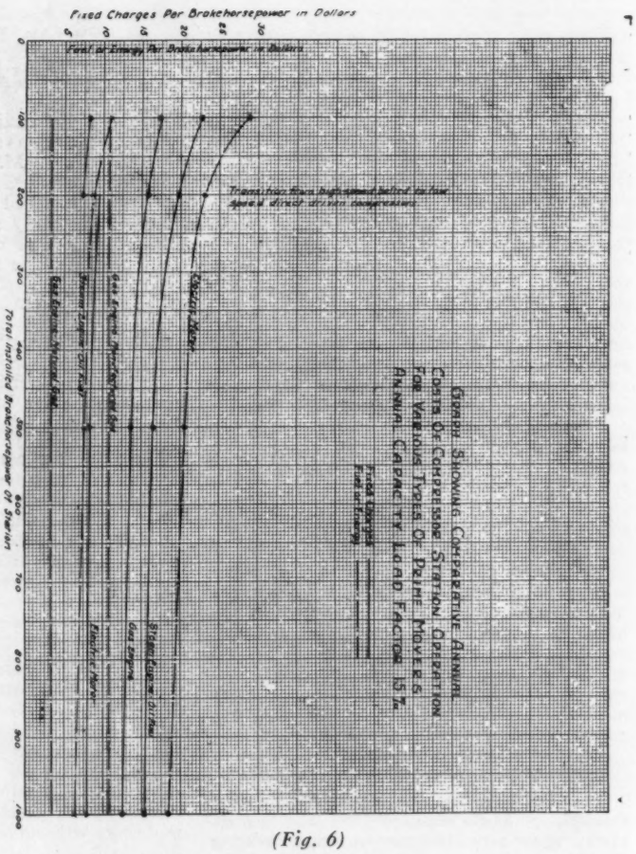
Application of V. S. Welch for a franchise to pipe natural gas into Artesia, New Mexico, from the Artesia oil field, has been approved by the city council of Artesia.

COMMUNITY GAS CO. GETS TEMPLE SYSTEM

A bid of $151,500 made by the Community Gas Company of Dallas, Texas, was successful in obtaining ownership of the Temple Gas Company of Temple, Texas, which was recently sold at Federal receiver's sale.


Total Annual Costs Per Brakehorsepower in Dollars
Total Installed Brake Horsepower of Station
Graph Showing Comparative Annual Costs Of Compressor Station Operation For Various Types Of Prime Movers Annual Capacity Load Factor 15%

(Fig. 5)


Fixed Charges Per Brakehorsepower in Dollars
Total Installed Brakehorsepower of Station
Graph Showing Comparative Annual Costs Of Compressor Station Operation For Various Types Of Prime Movers Annual Capacity Load Factor 15%

(Fig. 6)

Holder Station Design

(Continued from Page 35)

erected on the Pacific Coast. It will be observed that the minimum price for pressure storage is $104.50 for the 1,000 M.C.F. station, which cost does not decline for the larger sizes. This is because the 500 M.C.F. unit has been found to be the cheapest size and there would be slight reduction in cost resulting from simultaneous construction of more than two such units.

For distribution systems which are fed directly from low pressure holders without boosting, the low pressure type would be the cheapest for station larger than 750 M.C.F. However, on the Pacific Coast high pressure distribution predominates and the trend in that direction is manifest as the following statistics for California's utilities demonstrate:

MILES OF DISTRIBUTION MAIN

Year	High Pressure	Low Pressure
1916	2,665	4,499
1926	8,595	5,642
Increase	5,930	1,143
Percent Increase	222.5	25.5

In calculating costs for high pressure distribution, a sendout pressure of 5 pounds has been used as representing average practice. For systems employing higher pressures, the costs of the low pressure holder and booster station will be greater than those given and vice versa.

An hourly delivery capacity for compressors equivalent to 20 per cent of the storage capacity has been used, as this is the relation between peak hour sendout and storage

TABLE I

ITEM	STORAGE DIVIDED L. Pres.	L. P. at Gen. Sta. H. P. at District Holder Station	STORAGE CONCENTRATED Low Pressure
Total Daily Sendout		5,000 M.C.F.	
Total Storage		1,000 M.C.F.	
Located—			
At Generating Station	800 M.C.F.		1000 M.C.F.
At District Holder Station	200 M.C.F.		
Required hourly capacity of compressor and pipeline*	42 M.C.F.		83 M.C.F.
Initial line pressure**	26lb	75lb	22lb
Required compressor Brake Horse Power†	65	89	104
Size of pipe line	4"	3"	6"
Assumed hourly-yearly distribution load factor		40%	
Investment—			
Holders	$112,000	$105,300	$ 96,000
Compressor Equipment‡ (At Gen. Station)	10,600	13,900	16,000
(At Dist. Holder Station 5-lb. Discharge)	3,900		
Pipe Line	10,560	7,390	13,200
Total Investment	$137,060	$126,590	$125,200
Annual Costs—			
Interest 7%	$ 9,594	$ 8,861	$ 8,764
Depreciation—6% S. F. Holders 40-year life Comp. 15-year life Pipeline 20-year life	1,634	1,478	1,666
Oper. and Maint. Comp. Sts. except Fuel	8,100	5,200	6,050
Fuel (Mfg. gas 45c/M.)	3,978	5,052	2,952
Total Annual Costs	$ 23,306	$ 20,591	$ 19,432
Annual costs as above except Fuel	$ 19,328	$ 15,539	$ 16,480
Fuel (Nat. gas 25c/M.)	1,228	1,559	911
Total Annual Costs (Nat. Gas Fuel)	$ 20,556	$ 17,098	$ 1,711

*Supplying distant market only, the remainder of system is unaffected.

**Assuming 5lb terminal pressure.

†At source.

‡Gas engine driven, manufactured gas fuel.

where the latter is just sufficient to equate the hourly variation in load. No spare compressors have been included. We find that the hourly-yearly load factor for sendout from district holders ranges from 7 per cent to 25 per cent for systems supplying a domestic and commercial market. For the purposes of this study 15 per cent has been used. Costs are based on the employment of gas engine driven compressors utilizing natural gas fuel at 25c per M.C.F. As will be shown later this prime moved yields the lowest annual costs per unit of output or capacity, even at this low load factor, where natural gas is available. If manufactured gas fuel or electric motor is installed the annual costs would be increased by from $1.60 to $0.65 per year per M.C.F. of storage capacity depending on size of station.

Tables IV, V and VI, and Fig. 1, 2, and 3 show the cost relations determined as outlined above. Note that curves showing total unit investment costs of the two types plotted as a function of station capacity intersect at about 1,800 M. Curves showing total annual costs including interest, depreciation, labor, fuel and maintenance cross at about 7,000 M.C.F. when natural gas fuel is used. These computations are of course based on the assumption that transmission pressures are sufficient to store the gas in pressure holders without recompression. For storage close to the source, such pressures would not be economical, and correction would have to be made for the resultant additional costs. In this connection however, where manufactured gas is the commodity supplied, there is another important factor which must not be ignored, namely the effect in mitigating internal corrosion of pipe lines and meters, resulting from dehydration of the gas by compression and aftercooling.

It has been stated recently by several engineers who have studied the matter, that the benefits so derived justify the compression of manufactured gas to 50-100 pounds, independent of the economies accompanying the use of high pressure for distribution.

Since the use of pressure storage has become general, the question occasionally arises—is its use justified for storage at a generating plant where gas is or can be distributed direct from low pressure holders without boosting. Obviously these are conditions most adverse to pressure storage; however under certain circumstances its use is economical. Thus in a small oil gas plant there is not infrequently waste fuel available

TABLE II
INVESTMENT

Item	Low Pressure Storage	High Pressure Storage
Holder foundation and connections	$21,000	$13,250
Steam driven compressor installed 50lb 20M/Hr.		1,800
Steam economy 32lb 1HP/Hr. boiler capacity for compressor		2,600
Total Investment	$21,000	$17,650
ANNUAL COSTS		
Interest 7%	$ 1,470	$ 1,236
Depreciation—	137	275
Holder 40 yrs. Comp. equipment and boiler 15 yrs. Maintenance and supplies, holders and compressor station	115	200
Total Annual Costs	$ 1,722	$ 1,711

TABLE III
COMPARISON OF TRANSMISSION COSTS WITH AND WITHOUT TERMINAL STORAGE
(EQUAL 24 HR. DELIVERY CAPACITY)

Item	Case 1		Case 2		Case 3			Case 4	
	With Terminal Storage	Without Terminal Storage	With Terminal Storage	Without Terminal Storage	With Terminal Storage	Without Terminal Storage		With Terminal Storage	Without Terminal Storage
Length of Transmission Line	34 Miles		80 Miles		20 Miles			10 Miles	
Max. Demands (Sendout to Distribution System)									
24 Hour	672 MCF		2,400 MCF		4,512 MCF			3,360 MCF	
Hour	56 MCF		200 MCF		376 MCF			280 MCF	
Average hour (Peak Day)	28 MCF		100 MCF		188 MCF			140 MCF	
Diameter of pipe line	4″	6″	6″	8″	8″	10″	12″	6″	12″
Unit cost per lin. foot installed	$1.00	$1.25	$1.25	$1.75	$1.75	$2.10	$2.40	$1.25	$2.40
Comp. brake horsepower required	100	145	500	1,000	545	1,120	850	405	453
Initial line pressure	100 lb.	75 lb.	200 lb.	200 lb.	100 lb.	105 lb.	65 lb.	100 lb.	34 lb.
Hourly capacity compressors	28 M.	56 M.	100 M.	200 M.	188 M.	376 M.	376 M.	140 M.	280 M.
Peak day load factor (compressor station)	100%	50%	100%	50%	100%	50%	50%	100%	50%
Holder capacity required to equate load (22% of 24 Hr. Sendout)	148 M.	.....	528 M.	.....	993 M.	.....	.....	739 M.	.....
Assumed hourly-yearly load factor (sendout to District)	30%		40%		40%			40%	
Hourly-yearly load factor of compressor station and pipe line	60%	30%	80%	40%	80%	40%	40%	80%	40%
INVESTMENT									
Pipe Line	$180,000	$225,000	$528,000	$739,200	$184,800	$221,760	$253,440	$ 66,000	$126,720
Compressor Station (Gas Engine Driven)	15,400	21,400	60,500	110,000	66,000	123,000	96,900	50,200	56,200
Holder (Pressure Type)	18,500	.....	58,000	.....	106,250	.....	.....	79,800	.....
TOTAL INVESTMENT	213,900	246,400	646,500	849,200	357,050	344,760	350,340	196,000	182,920
ANNUAL COSTS									
Interest 7%	14,973	17,248	45,255	59,444	24,994	24,133	24,524	13,720	12,804
Depre. (Pipe Line 20 yr. Life).. (Compressors 15 yr. Life).... (Holder 40 yr. Life)	5,674	7,035	17,325	24,817	8,544	11,311	11,051	4,466	5,858
Comp. Sta. Oper. except fuel	6,050	6,200	9,300	15,100	9,400	15,400	13,200	8,800	9,000
Fuel (Nat. Gas at 25c per M.)	1,314	950	8,780	8,780	9,570	9,834	7,463	7,112	3,977
TOTAL ANNUAL COSTS	$ 28,011	$ 31,433	$ 80,660	$108,141	$ 52,508	$ 60,678	$ 56,238	$ 34,098	$ 31,639
Total annual sendout	147,168 M.		700,800 M.		1,317,504 M.			981,120 M.	
Cost per M.C.F. Transmitted	19.03c	21.36c	11.51c	15.43c	3.99c	4.61c	4.27c	3.48c	3.22c

Note: Line pack disregarded in all cases.

in the form of excess lampblack and the added labor of operating a small steam driven compressor would be negligible. We may then equate fixed and maintenance costs of low pressure holder against corresponding costs for high pressure holder, boiler and compressor. We find that up to a capacity of 100 M. pressure storage is cheaper, and at this point the annual costs are approximately identical, as indicated in Table II.

It should be observed however that under the above conditions with the pressure storage installation, dehydration is obtained incidentially without any expenditure whatever.

Another factor which will frequently assume importance in an analysis of cumparative storage costs is the matter of increment installation of pressure holders. This may greatly influence costs over a period of years due to the flatness of the investment-capacity curve for this type. This point is illustrated by Table VII, based on actual conditions prevailing in a community of 28,000 meters, where the peak day demands are increasing at the rate of about 1,000 M.C.F. per day per year and hence the annual increase in storage requirements would be approximately 250 M.C.F. The present storage is 2,400 M.C.F. and the peak day 10,000 M.C.F. If low pressure holders are to be installed the unit must be at least 2,000 M. because the increase in cost of smaller units would

TABLE IV

COMPARATIVE UNIT INVESTMENT—LOW PRESSURE LIFT TYPE AND HIGH PRESSURE RECEIVER TYPE GAS HOLDERS PER M.C.F. OF HOLDER CAPACITY

Holder Capacity Cubic Feet	Low Pressure			High Pressure			Valves, Regulators and Piping
	Holder	Foundation	Total	Holder	Foundation	Total	
100,000	$210.00	$20.00	$230.00	$125.00	$2.50	$127.50	$5.00
200,000	140.00	16.00	156.00	115.00	2.00	117.00	4.50
300,000	130.00	14.00	144.00	109.00	1.50	110.50	4.00
400,000	118.00	13.00	131.00	107.00	1.50	108.50	3.50
500,000	106.00	12.00	118.00	105.00	1.50	106.50	3.00
1,000,000	85.00	11.00	96.00	103.00	1.50	104.50	2.50
2,000,000	80.00	10.00	90.00	103.00	1.50	104.50	1.50
3,000,000	79.00	9.00	88.00	103.00	1.50	104.50	1.00
5,000,000	69.00	7.00	76.00	103.00	1.50	104.50	.80
10,000,000	61.00	5.00	66.00	103.00	1.50	104.50	.50

TABLE V

UNIT COSTS OF LOW PRESSURE LIFT TYPE HOLDER STATIONS WITH GAS ENGINE DRIVEN COMPRESSOR 5 POUNDS DISCHARGE PRESSURE—NO SPARE UNITS

Holder Capacity Cubic Feet	Required Hourly Sendout Capacity Compressors M. Per Hour	Engine Brake Horsepower	Installed Cost of Compressors, Building and Auxiliaries		Unit Cost of Holder and Foundation Per M. C. F.	Unit Cost Holder Foundation and Compressor Station Per M. C. F.
			Per Brake Horsepower	Per M.C.F. of Holder Capacity		
100,000	20	10	$220.00	$22.00	$230.00	$252.00
200,000	40	20	195.00	19.50	156.00	175.50
300,000	60	30	175.00	17.50	144.00	161.50
400,000	80	40	165.00	16.50	131.00	147.50
500,000	100	50	161.00	16.10	118.00	134.10
1,000,000	200	100	154.00	15.40	96.00	111.40
2,000,000	400	200	141.00	14.10	90.00	104.10
3,000,000	600	300	132.00	13.20	88.00	101.20
5,000,000	1,000	500	121.00	12.10	76.00	88.10
10,000,000	2,000	1,000	110.00	11.00	66.00	77.00

TABLE VI

COMPARATIVE ANNUAL COSTS LOW PRESSURE AND HIGH PRESSURE HOLDER STATIONS—PER M. C. F. OF HOLDER CAPACITY

	Low Pressure								*High Pressure*			
Holder Capacity Cubic Feet	Unit Cost Holder, Foundation and Compressor Station	Depreciation: Holder 40 Year Life .646	Depreciation: Comp. Station 15 Year Life 4.296	Holder Maintenance	Interest 7%	Total Fixed Charges	Compressor* Station Operating Expenses (Labor, Fuel, Supplies, Maintenance)	Total Annual Costs	Unit Cost Holder, Foundation and Connections	Interest 7% and Depreciation 40 Year Life	Maintenance	Total Annual Costs
100,000	$252.00	$1.49	$.95	$1.15	$17.64	$21.23	$23.00	$44.23	$132.50	$10.13	$.66	$10.79
200,000	175.50	1.01	.84	.78	12.29	14.92	15.00	29.92	121.50	9.29	.61	9.90
300,000	161.50	.93	.75	.72	11.31	13.71	11.50	25.21	114.50	8.75	.57	9.32
400,000	147.50	.85	.71	.66	10.33	12.55	9.40	21.95	112.00	8.56	.56	9.12
500,000	144.10	.76	.69	.59	10.09	12.13	8.15	20.28	109.50	8.37	.55	8.92
1,000,000	111.40	.62	.66	.48	7.80	9.56	5.40	14.96	107.00	8.18	.53	8.71
2,000,000	104.10	.58	.57	.45	7.29	8.89	3.50	12.39	106.00	8.10	.53	8.63
3,000,000	101.20	.57	.57	.44	7.08	8.66	2.60	11.26	105.50	8.07	.53	8.60
5,000,000	88.10	.49	.52	.38	6.17	7.56	1.75	9.31	105.30	8.05	.53	8.58
10,000,000	77.00	.43	.47	.33	5.39	6.62	1.51	8.13	105.00	8.03	.52	8.55

*Gas engine driven units, 5 lb. discharge pressure, 15% capacity load factor, 1,000 B. T. U. natural gas fuel at 25 cents per M.

TABLE VII

CALCULATION SHOWING EFFECT OF INCREMENT INSTALLATION OF STORAGE ON TOTAL COST

Period	*Investment*			*Annual Fixed Charges*			*Accumulative Fixed Charges*		
	Pressure Holders	2,500 M. L. P. Holder	5,000 M. L. P. Holder	Interest 7%, Depreciation-Holder 40 Year Life Depreciation-Compressors 15 Year Life Maintenance-Holder Only			Pressure Holders	2,500 M. L. P. Holder	5,000 M. L. P. Holder
Years				Pressure Holders	2,500 M. L. P. Holder	5,000 M. L. P. Holder			
1 and 2	$ 57,250	$244,500	$402,000	$ 9,327	$42,240	$67,100	$ 9,327	$ 42,240	$ 67,100
3 and 4	110,500	244,500	402,000	18,002	42,240	67,100	27,329	84,480	134,200
5 and 6	163,750	244,500	402,000	26,677	42,240	67,100	54,006	126,720	201,300
7 and 8	217,000	266,500	424,000	35,352	47,430	72,290	89,358	174,150	273,590
9 and 10	270,250	266,500	424,000	44,027	47,430	72,290	133,385	221,580	345,880
11 and 12	323,500	489,000	424,000	52,702	84,480	72,290	186,087	306,060	418,170
13 and 14	376,750	511,000	446,000	61,377	89,670	77,480	247,464	395,730	495,650
15 and 16	430,000	511,000	446,000	70,052	89,670	77,480	317,516	485,400	573,130
17 and 18	483,250	511,000	446,000	76,727	89,670	77,480	396,243	575,070	650,610
19 and 20	536,500	511,000	446,000	87,402	89,670	77,480	483,645	664,740	728,090

TOTAL COST (FIXED CHARGES ONLY) AT END OF PERIOD WHEN 5,000 M. STORAGE BECOMES COMPLETELY OPERATIVE

	10-500 M. Pressure Holders and Connections	2-2500 L. P. Holders and Compressor Stations	1-5000 L. P. Holder and Compressor Station
Capital Investment	$536,500	$511,000	$446,000
Accumulative Fixed Charges	483,645	664,740	728,090
TOTALS	$1,020,145	$1,175,740	$1,174,090

DETAIL OF INVESTMENT

Pressure storage—10-500 M. units at $106.50 per M.—$52,350 each, plus valves and connections for final installation—$4,000.
2—2500 M. L. P. holders at $89—$222,500 each } Compressor station totalling 500 H. P. cost $66,000.
1—3000 M. L. P. holder at $76 — $380,000 each }

Annual increase in storage requirements 250 M. One 500 M. pressure holder unit installed biennially. Compressor station machinery installed in three measurements as required.

TABLE VIII

COMPARATIVE ANNUAL COMPRESSION COSTS WITH VARIOUS PRIME MOVERS—BASED ON 15% ANNUAL CAPACITY LOAD FACTOR

Total Station Brake H. P.	Type of Prime Mover	Investment Total	Interest 7% Depreciation 15 Year Life		Fuel or Energy*		Labor Supplies and Maintenance Total	Operating Expenses		Annual Costs	
			Total	Per Brake H. P.	Total	Per Brake H. P.		Total	Per Brake H. P.	Total	Per Brake H. P.
100	Steam	$20,000	$2,259	$22.59	$1,090	$10.90	$7,900	$8,990	$89.90	$11,249	$112.40
	Gas—Natural Gas	15,400	1,740	17.40	329	3.29	4,250	4,579	45.79	6,319	63.19
	Mfg. Gas				1,076	10.76		5,326	53.26	7,066	70.66
	Electric	7,400	836	8.36	2,882	28.82	4,000	6,882	68.82	7,718	77.18
	Steam	35,000	3,954	19.77	1,609	8.05	8,550	10,159	50.79	14,113	70.57
200	Gas—Natural Gas	28,200	3,185	15.93	658	3.29	4,850	5,508	27.54	8,693	43.47
	Mfg. Gas				2,152	10.76		7,002	35.01	10,187	50.94
	Electric	13,200	1,491	7.46	4,613	23.06	4,150	8,663	46.32	10,154	50.77
	Steam	73,500	8,303	16.60	3,820	7.64	11,600	15,420	30.84	23,723	47.44
500	Gas—Natural Gas	60,500	6,834	13.66	1,643	3.29	7,700	9,343	18.68	16,177	32.34
	Mfg. Gas				5,380	10.76		13,080	26.16	19,914	39.82
	Electric	37,500	4,236	8.48	10,379	20.76	6,200	16,579	33.16	20,815	41.63
	Steam	135,000	15,250	15.25	6,300	6.30	17,400	23,700	23.70	38,950	38.95
1,000	Gas—Natural Gas	110,000	12,426	12.43	3,285	3.29	14,400	17,685	17.69	30,111	30.11
	Mfg. Gas				10,760	10.76		25,160	25.16	37,586	37.59
	Electric	70,000	7,907	7.91	18,451	18.45	10,300	28,751	28.75	36,658	36.65

*Assumed—Fuel Oil at $1.00 per bbl.
Natural Gas (1000 B. T. U.) at 25 cents per M. Mfg. Gas (550 B. T. U.) at 45 cents per M.
Electric Energy at 2.5 cents, 2.0 cents, 1.8 cents and 1.6 cents per K. W. H. respectively.

be prohibitive. However, with pressure holders 500 F.C.F. units might be installed singly without appreciable increase in first cost. A comparsion has therefore been made of the total fixed costs over a 20-year period during which the increase in required storage would be 5,000 M.C.F., for 10-500 M.C.F. pressure holders installed biennially, 2-2500 M.C.F. low pressure at five year intervals, and 1-5000 M.C.F. holder. With the low pressure holders are included the investment costs of a 500 H.P., 5 pound discharge, gas engine driven compressor station installed in three increments as required. No operating costs except maintenance have been included. It will be noted that for these particular conditions total fixed costs for the two low pressure designs are identical and about 15 per cent greater than the high pressure, although the original investment in the latter exceeds that for the two holder low pressure design by 5 per cent, and the single 5000 M.C.F. holder by 20 per cent. Operation of compressor station during this period would add about 14 per cent more to the total costs of the low pressure design.

3. The factors which govern the selection of compressor prime movers for district holder stations will naturally be influenced by local conditions to a much greater degree than in the case of the holders. The more important variables are—fuel and energy cost, station load factor, reliability of electric service and the type of compressor to be driven. By way of illustrating the last point, gas engines are not well adapted for driving centrifugal compressors as are motors or turbines. However the use of centrifugal compressors is limited to large volumes and relatively low pressures, hence any one of the three types of motive power considered herein, steam, gas engine, or electric motor, may be employed in the great majority of stations where either positive rotary boosters or reciprocating compressors are installed.

Fuel and energy costs will of course vary over a considerable range with both time and location. In this study prices for fuel oil, cost of gas and electric energy have been used which prevail in Los Angeles or San Francisco at present. With comparison made on this basis the effect of changes in this factor may be deduced by applying the necessary correction.

A station load factor of 15 per cent (hourly-yearly) has been adopted as explained on Page 6. Higher load factors than this would favor the steam and gas engine drive as against the electric and vice versa. The study which is summarized in Table VIII and shown graphically in Figs. 4, 5, and 6, covers a capacity range of 100 to 1000 horsepower. Beyond this size there is relatively little change in costs either fixed or operating except those due to lower attendance per horsepower and lower steam consumption per H. P. hour.

Commenting on this table we observe that the steam driven compressor is out of the picture throughout the range of size considered. This is due to high investment per unit of capacity, boiler room labor and relatively lower thermal efficiency than the gas engine. This conclusion with respect to steam drive should not be considered as necessarily applicable to its use in compressor stations located at generating plants because here there may be available steam generated in waste heat boilers or from waste fuel and boiler room attendance will be required for gas making purposes.

As between the gas engine and motor drive the former is about 18 per cent cheaper in annual costs with 1000 B.t.u. natural gas fuel at 25c per M.C.F. and approximately equal with 550 B.t.u. manufactured gas at 45c per M.C.F. Note that the investment per Brake Horse Power for the motor driven station is about 60 per cent of corresponding figures for the gas engine, whereas the electric energy costs from 1.7 to 2.7 times as much as the manufactured gas fuel and these two factors are controlling. This relationship points to an ideal design for installation on a manufactured gas system in which the gas engine unit would be provided to carry the base load and the motor driven compressor would handle peaks. This arrangement would afford a minimum annual cost and excellent reliability. If no standby electric service is available and outages are frequent, the dependability of the gas engine will force its selection.

MATERIAL INCREASE IN NUMBER OF DOMESTIC CONSUMERS OF NATURAL GAS IN 1926

THE steady growth of the natural gas industry in the United States was continued in 1926, when 1,313,019,000,000 cubic feet of gas was produced and delivered to consumers, an increase over 1925 of 10 per cent, according to the United States Bureau of Mines, Department of Commerce. Of this amount 166,000,000 cubic feet was piped to Mexico and Canada, leaving 1,312,853,000,000 cubic feet as the total internal consumption in 1926. The value of the gas per thousand cubic feet at the wells and at points of consumption showed increases over 1925, the former rising from 9.4 to 9.5 cents, the latter from 22.3 to 22.8 cents. In neither case, however, was the price of 1923 and some previous years attained.

Domestic household consumers used 22 per cent of the total consumption of natural gas in 1926, leaving 78 per cent for industrial consumption. This indicates a slight growth on the part of the latter in 1926. The total return, however, from domestic consumption was greater, since domestic users paid an average of 58.1 cents per thousand cubic feet as compared with 12.8 cents for industrial concerns. In 1926 there were 3,731,000 domestic consumers of natural gas as compared with 3,508,000 in 1925. This represents a gain of 223,000, which is, with the exception of 1913 and 1922, the largest yearly increase ever recorded. California and Texas each recorded an increase of about 70,000 in number of domestic consumers and far surpassed the other states in this respect.

The relative rank of the three chief gas-producing states was unchanged in 1926. Oklahoma, which ranks first, recorded a 15 per cent gain in output; California, which ranks second, a 9 per cent gain; but production in West Virginia, the next ranking state, showed a slight decrease. Texas registered a material gain in output and not only took fourth place from Louisiana but threatens to displace West Virginia in the near future.

The total consumption of natural gas (including residue gas from natural-gas gasoline plants) by industrial users in 1926 amounted to 1,023,678,000,000 cubic feet, an increase over 1925 of 12 per cent. The consumption of natural gas for field and industrial uses, exclusive of carbon black, again showed an increase.

The interstate movement of natural gas in 1926 amounted to 209,527,000,000 cubic feet, a slight increase over the previous year. The movement from West Virginia to Ohio and Pennsylvania continued to be of first importance. Of more than passing interest was the increase in the counter movement of gas from Ohio to West Virginia.

CONRAD FRANCHISE VOTED

The city of Conrad, Montana, has voted a gas franchise to M. S. Darling and E. B. Emrick to supply gas to that city.

STOCKTON-LODI LINE TO COST $89,000

The new high-pressure gas system, being built by the Pacific Gas and Electric Company, linking together the Stockton and Lodi, Calif., gas plants, will cost approximately $89,000, according to recent announcement of the company.

SITE PURCHASED FOR EAST TEXAS COMPRESSOR STATION

Dixie Pipe Line Company has bought a 30-acre tract of land west of the Waskom gas field, East Texas, for a site of its two $500,000 booster plants to be built on the proposed line from this point and other points in Louisiana to Houston and Port Arthur, Texas.

The Waskom station will have 26 units of 4680 horsepower each, according to the plans.

PANHANDLE LINE TESTED

Preliminary tests for completion of the West Texas Gas Company line from Amarillo to Canyon, Kress and Happy, lower Panhandle region towns, are now being made. The Randall County court house at Canyon is the first consumer.

This line will eventually move 90,000,000 cubic feet of gas daily to towns and cities of the South Plains region. Prairie Oil & Gas Company owns the line.

McLEAN, TEX., COMPANY ADDS TO GAS SUPPLY

A four-inch line is being run by the McLean Gas Company to the Kachelhoffer gas well, four miles east of McLean, where the city gets its natural gas. This line is also being extended 11 miles to the Terrell well on the northeast. McLean got its first gas service last November, and H. R. Upham, present owner of the company, took charge in February of this year.

CLOSE "NATURAL GAS ASSOCIATION OF AMERICA" OFFICE

Due to the amalgamation of the Natural Gas Association of America with the American Gas Association, the office of the former, Oliver Building, Pittsburgh, Pa., was closed on September 1, 1927. Hereafter all communications should be addressed to the Natural Gas Department, American Gas Association, 420 Lexington Avenue, New York City.

MONROVIA DISTRICT OF SOUTHERN COUNTIES ADDS FACILITIES

Approximately a quarter million of dollars is to be spent by the Southern Counties Gas Company in the Monrovia, Calif., district for construction of new buildings and enlargement of facilities, according to announcement by Walter E. Keefe, district manager. The construction work will begin immediately.

Chief among the new items to be constructed are: A new high pressure gas holder; compressor building; store room and additional garage on South Primrose property; a new El Monte office building; an office building in Arcadia; and the purchase of a lot for warehouse and pipe yard. Construction of new gas main lines which will improve the service over the entire district will also be in the expansion program.

ANOTHER LINE TO TAP MONROE GAS FIELDS

Construction has been started by the Louisiana-Texas Construction Company, subsidiary of the Gas and By-Products Company, on a 20-inch, 40-mile line from the Monroe, gas field to Pine Bluff, Ark., which will transport gas from the Natural Gas Production Company of Louisiana's wells for the Excelsior Pipe Line Company. A 12-inch branch line will be built from the 20-inch main to Camden, Arkansas, to furnish gas for the Southern International Paper Company, which is now building a $5,000,000 plant at Camden.

The 20-inch line will link the Monroe gas field with Memphis, Tennessee and also Pine Bluff, Arkansas, for municipal fuel. The line to Memphis is not expected to be built before the middle of 1928.

A. G. A. PROCEEDINGS FOR 1926

The American Gas Association's Proceedings for the 1926 convention at Atlantic City are now ready for distribution, the book consisting of 1,290 pages and selling for $3.00 a copy.

THE AUSTRIAN WAY

Pay your gas and electric bills on three days' notice or have your service shut off! This is the rule of the municipal gas and electric system of Vienna.

These two systems, though both owned by the city, are operated separately. As soon as the bills are ready they are turned over to the Post Office Department for delivery, unenclosed, by mail carriers. If they are not paid at some branch post office within the prescribed three days, the collector is sent to the homes. He makes just one call. If the money is not handed over, the service stops at once.

OKLAHOMA NATURAL BUILDING PROGRAM FOR COMING WINTER

R. C. Sharp, president of the Oklahoma Natural Gas Corporation, states that sometime this month, probably by the 15th, his company will begin construction of the 16-inch gas pipeline from the Norge field to the South Canadian river. The company already has one 12-inch line from Norge to the South Canadian river and two 12-inch lines from the South Canadian river into Oklahoma City.

Mr| Sharp states that the construction of the proposed 22-inch line from Norge to the Texas Panhandle gas producing area will commence possibly in March or April next.

ADDITION TO VENTURA PLANT

One 165 H. P. compressor unit has been installed at the California Gasoline Company's Shields Lease gasoline plant in the Ventura fields, the equipment being added for the purpose of putting dry gas back into well production.

W. H. MIXTER WITH AMERICAN RADIATOR COMPANY

W. H. Mixter, formerly domestic gas sales engineer in the gas sales department of the P. G. and E., at the San Francisco general office, has severed his connection with that utility to take a position as outside salesman and heating engineer with the American Radiator Company, San Francisco branch. During the past two years Mr. Mixter has been very active in the work of the Gas Appliance Society, serving first as assistant secretary, and later as secretary of that organization.

CHAMBER OF MINES AND OIL PLAN OFFICE BUILDING

The Chamber of Mines and Oil in Los Angeles will soon begin the erection of a height-limit office building at Tenth and Olive Streets, Los Angeles. It is to be a class A type building and will be called the Chamber of Mines and Oil Building. It will contain thirteen stories and will house a great number of oil companies, supply companies and technical men. Edwin Higgins, secretary of the Chamber, has been placed in charge of securing tenants.

SO. COUNTIES SALESMEN HEAR "PERIOD MODELS" TALK

C. B. Babcock, president of the C. B. Babcock Company, San Francisco, delivered a talk before salesmen of the Southern Counties Gas Company on September 22, his subject being "Humphrey Radiantfire Period Models."

POTEAU UTILITY MAN IS TRANSFERRED TO NORMAN

L. A. Wiedman, manager of the Oklahoma Gas & Electric Company at Poteau, has been transferred to Norman, Okla., to succeed C C. Stewart, resigned. Mr. Wiedman will be succeeded at Poteau by Ed S. Ryan, commercial manager at Ft. Smith.

CHICKASHA TO HAVE A NEW GAS COMPANY OFFICE BUILDING

A contract was let September 15 by the Southwestern Light & Power Co. for the construction of a two-story steel and concrete office building for Chickasha, Okla. The new structure will be at Fifth and Chickasha avenue. The contract price is $55,000 and the time limit for completion of the building is January 1, 1928.

ASSOCIATION HAS FIFTH STATE FAIR EXHIBIT

The Oklahoma Utilities Association, for the fifth year, was represented by an exhibit at the Oklahoma State Fair, September 24 to October 1. The exhibit, as usual, consisted of maps and charts showing the development of all branches of the utility industry in Oklahoma. Motion pictures as heretofore were used to attract the crowds. Several good new films were available this year.

MARIETTA TO VOTE ON GAS FRANCHISE SOON

City officials of Marietta, Okla., have called a special election for October 18 for a vote on a franchise to the Community Natural Gas Company for a natural gas distribution plant. The company promises to begin construction by November 1.

J. A. CAMPBELL PUBLISHES ABSORPTION BOOKLET

A well illustrated booklet on the process of natural gasoline absorption has just been published by J. A. Campbell, natural gas engineer of Long Beach, Calif. The book delves into the many factors involved in extraction of gasoline from natural gas and shows views of every part of a natural gasoline plant, including close-up illustrations of absorbers, strippers, interchangers, scrubbers, inlet and outlet lines, pumping mechanism, arrangement of cooling coils, and dephlegmators.

The cycle of operation involved in gasoline extraction is described in "layman's" language, with an interesting computation of the amount of oil film contained within a given area of an oil froth absorber. It is estimated that within one cubic foot of oil froth is contained 603 square feet of oil film.

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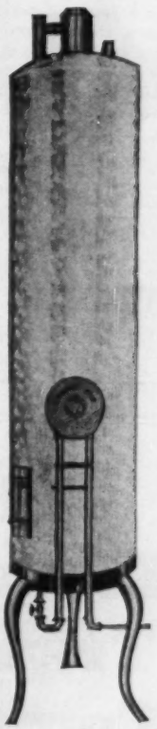

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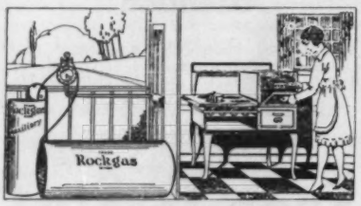

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WADE ENGINEERING MOVES OAKLAND OFFICE

Wade Engineering Company of Los Angeles, which handles products of the Lincoln Electric Company, Cleveland, Ohio, has moved its northern California office from 69 Webster Street, Oakland, to 533-539 Market Street, San Francisco.

MAXON WITH GENERAL PET.

H. H. Maxon, for years secretary of the Independent Petroleum Marketers' Association, is now district credit manager for the General Petroleum Corporation, Los Angeles.

L. A. UTILITY ASKS PERMIT TO ISSUE COMMON STOCK

Los Angeles Gas and Electric Corporation has applied to the state railroad commission for authority to issue 60,000 shares of its common stock at $100 per share, and to issue 30,000 shares ($3,000,000) of such stock to its stockholders as a dividend representing unappropriated surplus, and to use the balance of the said stock to finance additions and betterments.

GAS CONSERVATION COMMITTEE MEETS SEPTEMBER 12

The Gas Conservation Committee of the American Petroleum Institute, appointed last December, met in Colorado Springs on September 12th to formulate definite suggestions as to measures for preventing oil and gas waste. E. W. Marland is chairman of the committee.

DE-EMULSIFYING UNIT ADDED

The Des Moines Electric Light Company has ordered from the Semet-Solvay Engineering Corporation of New York, a De-Emulsifying unit for dehydrating tar to be installed in its plant at Oskaloosa, Iowa. The gas output is around 100,000 cubic feet daily and the De-Emulsifier will separate from the emulsion and plant effluent the tar which it contains and render it in a merchantable condition. The process, which employs chemical reaction and heating, also leaves the waste liquids of the plant safe for disposal.

TWIN CITIES GAS CO. SOLD

Twin Cities Gas Company, serving Beaumont, Banning, Hemet and San Jacinto, Calif., has been authorized by the California Railroad Commission to sell its properties to Southwestern Gas and Fuel Company and the latter company has been authorized to issue $40,000 of stock, and $114,500 of bonds to finance the purchase thereof and to pay for additions, betterments, extensions and improvements.

REPRESENTATIVES APPOINTED FOR PIPE JOINT COMPOUND

An extensive trip throughout the Northwest and Pacific Mountain States has just been completed by H. S. Shuey of the Alloys Co., subsidiary of the Merrill Co. He reports that the following representatives have been appointed to handle the distribution of Merco Pipe Joint Compound:

The Republic Supply Co., Denver, Colo.; Greene Brothers, Wichita Falls, Tex.; Robert M. Hartwell Co. Inc., Los Angeles, Calif.; Gordon & Belyea, Ltd., Vancouver, B. C.; The Beebe Co., Portland, Ore.; B. V. Emery & Co., Inc., Tulsa, Okla.; R. J. Glendinning & Co., Salt Lake City, Utah; Industrial Belting & Supply Co., San Francisco, Calif.; V. S. Jenkins Co., Seattle, Wash., and Atlas Packing & Rubber Co., Seattle, Wash.

M. H. Newell, manager of the Alloys Co., is now on an extensive Eastern trip, for the purpose of appointing agents throughout territory not at present represented.

Isabel Allobach

So. Counties Launches Home Service Program

HOME service work went under experiment in the Southern Counties Gas Company's Bay District, Santa Monica, Calif., some two and a half years ago. Under the supervision of J. C. Gilbert, district manager at Santa Monica, and under the efficient personal direction of Miss Isabel Allobach, director of home service for that district, the work achieved such a remarkable success that the company is now launching into a broad program of home service throughout its extensive system in Southern California.

Eventually there will be home service directors at San Pedro, Whittier, Monrovia, Santa Barbara, Ventura and Pomona. Santa Ana already has a director, and one is to be supplied at Santa Monica to fill the vacancy created by the promotion of Miss Allobach, who, on September 1, became supervisor of home service for the company's system.

Miss Allobach has had an extensive background of experience in the home service field, including a period as a Federal farm agent. She has been particularly successful in the Santa Monica district of the Southern Counties in building friends for the utility through contacting organized groups of women, as well as meeting the consumers in their own homes to solve their gas appliance and related problems.

NIXON GETS FRANCHISE TO SERVE ODESSA, TEX.

A 50-year franchise to furnish natural gas to the town of Odessa, Texas, has been granted to J. Truman Nixon of Tulsa. The supply will be obtained from nearby fields in Ector, Crane and Winkler counties following the discovery of large quantities of nonsulphurous gas in these producing areas.

Under the terms of the franchise Nixon is obligated to start construction of lines within nine months following date of contract and to be giving service within one year.

A 50-cent per thousand feet rate for the first 30,000 feet has been set, which will give the town the lowest domestic rate in West Texas. Industrial rates will be proportionately low.

Selling Space Heating

(*Continued from Page 40*)

gas sendout, for they are permanent fixtures in the home. Too much emphasis cannot be laid on the importance of summer selling, for the seed which is not immediately harvested in direct summer sales will produce a fall yield proportioned directly to the effort expended in June, July and August.

RENTAL SALES

One particular plan for stimulating sale of radiant type space heaters, a plan which is not new to gas appliance merchandising, but which gives promise of a decided success in its application to space heating, is the rental sales plan, being introduced this year by a number of gas utilities in many parts of the United States.

Under this plan the gas company agrees to install a given heater for a nominal sum, and to permit the user to rent the appliance for the period of a year, for a small amount payable each month with the gas bill. At the expiration of the year, when the twelfth small payment has been made, the gas company salesman calls upon the housewife and suggests that she apply the sum paid in as rental upon the purchase of the appliance, or that she apply it upon any other space heater which she might prefer.

The twelve small payments already made have accustomed the user to buying from the gas company on the installment plan, and the satisfaction she has had from use of the heater has broken whatever sales resistance might have existed. From the gas company's angle, this plan if widely pushed, has meant an increased sendout, and has produced a list of high class prospects for space heaters—and for other gas merchandise as well.

This rental plan has been in effect for several years in England, and its success is seen in the fact that there are over 700,000 heaters on gas lines in London, put there through rental. Manchester, and other communities where this plan has been followed, show similar results. The plan has been formally approved by a special committee reporting to the New England Gas Sales Conference, and in the west several companies are already putting heaters on the line through this method. Where central househeating is in vogue the plan proves its value, for after a year of using the space heaters in conjunction with a furnace the consumer has demonstrated to her satisfaction that the central plant can be started later in the fall and shut off earlier in the spring, while other fuel savings can be made in the coldest periods through using the heater for auxiliary purposes.

It is no news that space heating through radiant type heaters goes hand in hand with gas furnace sales, the sale of a heater paving the way for the later investment in furnace equipment.

SELL OLD RESIDENCES

As a closing thought on gas space heating, the gas salesman will do well indeed with this type of business to direct his efforts towards the old residence. This is not to say that new homes are to be overlooked. Far from it! But the new home presents a problem of a distinct kind. There the salesman is in competition with every form of equipment and furnishing which properly finds its way into the fitting of a new residence. The procedure to be followed calls for selling a complete gas service, to protect every portion of the future gas sendout, and methods of working with builders, architects and owners are fast being developed to cope with this important phase of the gas sales task.

But in the old residence the salesman does not have to compete with many home furnishings which will class as more essential than a gas heater. He can center his effort upon selling a quality appliance, to harmonize with present furnishings, and can do an all-important job in helping to increase the sendout through existing services.

No attempt has been made to comprehensively deal with the sale of gas space heating in this brief article. It is merely hoped that the foregoing paragraphs will point the attention of gas sales departments, as we enter the peak season of space heater sales, to the essential character of this load, to its possibilities for proving the entering wedge to future sales of gas heating equipment. And more particularly it is hoped that the present heating season, now right at hand, will begin a year-round activity in the sale of househeating. The competition of other fuels is increasingly keen. The gas salesman out on the firing line must be alive to it and forestall it by selling gas househeating in what hitherto have been considered off seasons.

And, finally, space heating should bear its share of the load in the gas company's program of cooperation with the American Gas Association Testing Laboratory. There is no better avenue through which to advertise the work of the national Laboratory than through locally advertising and selling Laboratory-approved space heaters.

NATURAL GAS HANDBOOK NOW OFF THE PRESS

The Metric Metal Works of the American Meter Company, Inc., announces that the fourth edition of the "Handbook of Natural Gas" is now off the press and ready for distribution. Prices are $5.00 for cloth and $6.50 for leather editions. The volume is attractively gotten up, and contains 584 pages, 181 illustrations, and 220 tables, more than half of which are new data.

The preface to this edition presents something of the background from which the "Handbook of Natural Gas" was prepared. Regarding earlier material published by the same company, the preface has this to say:

"The first data, furnished by the late Mr. F. H. Oliphant, a member of the U. S. Geological Survey, were presented in a simple way as a part of our commercial catalogs. By 1913, however, the industry had so expanded and such a vast number of men had become interested and employed in it, that it seemed a book devoted entirely to the subject of the production, transportation and distribution of natural gas would be warranted."

Quoting further:

"The late Mr. H. P. Westcott undertook the editing of our first edition of the 'Handbook of Natural Gas.' . . . three editions were published.

"In 1924, before the third edition of this book was exhausted, we lost the services of Mr. Westcott through his untimely death . . . "our Mr J. C. Diehl has completely revised all data formerly published on this subject and compiled information and tables covering new phases and methods of operation, all of which are now presented in this new book.

"We dedicate our 'Natural Gas Handbook' to the gas industry, in the hope that it may prove helpful to all interested and engaged in the further development of this important business.

"The publisher desires to express its appreciation to the many operators and engineers who have so kindly assisted the author by furnishing detailed material, without which much of the information in this edition could not have been supplied."

METRIC METAL WORKS
of America Meter Company, Inc.

CALIFORNIA UTILITIES ARE CUSTOMER OWNED

The Pacific Gas and Electric Company has recently completed a canvass of the distribution of ownership of the stock of California gas and electric companies. Statistics secured from the twelve largest utilities in the State furnishing these services to the public show that the stock of these twelve companies alone is held by 207,884 individuals, of whom 183,940, or 88.5 per cent are California residents. Only 23,944 stockholders, or 11.5 per cent of the total, are non-residents of the State.

MERCO NORDSTROM PAMPHLET

The service of lubricated valves within gas plants and throughout the gas industry is interestingly described in a pamphlet just issued by Merco Nordstrom Valve Company. The pamphlet, which is illustrated to show different ways in which Merco valves are installed, can be obtained upon request from the manufacturers, 121 Second Street, San Francisco.

CHANDLER, ARIZ., VOTES FRANCHISE TO C. A. L. AND P.

A franchise has been voted by Chandler, Arizona, to the Central Arizona Light and Power Company. It is understood that the company, as soon as negotiations can be completed will take over the interests of the Southside Gas and Electric Company in Chandler, and will at once establish an office there.

NEEDLES UTILITY PLANNING BETTERMENTS

Needles Gas and Electric Company, Needles, Calif., has applied to the State Railroad Commission for authority to issue and sell $25,000 additional of first mortgage bonds at not less than 96 per cent of par value, plus accrued interest, for the purpose of financing additions and betterments to its plant and properties.

STANDARD GASOLINE MEN BEGIN FALL STUDY

In the Ventura, Calif., division of the Standard Gasoline Company, 46 out of a possible 80 employees have registered for courses given in the company school, for the term just opening.

OFF TO HONOLULU

T. K. M. Smith, of the Industrial Fuel Supply Company, Anaheim, Calif., and president of the recently formed Southern California Meter Association, has left for a month's trip to the Hawaiian Islands. Mr. Smith is a former resident of Honolulu, but is making his first trip to the islands in the past nine years.

HIGH PRESSURE LINE BEING ADDED AT FORT COLLINS

The Fort Collins District of the Public Service Co. of Colorado is now completing a high pressure reinforcement to its gas distribution system by building a belt line about the city at an extra expense of $20,000.

Natural gas brought to the city from the Wellington dome was only introduced a little over a year ago, and is now being used in approximately 650 homes for heating and domestic purposes.

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WATER HEATERS

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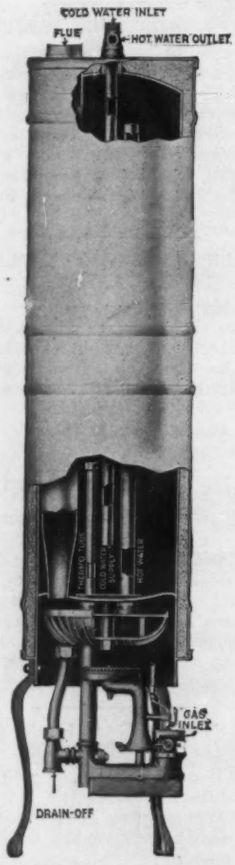

Detachable Steel Cell Heating Unit

No. 24—18 gallons..$ 75.00
No. 32—26 gallons.. 85.00
No. 50—40 gallons.. 135.00
With Safety Shut-off 150.00
No. 60—52 gallons.. 185.00
With Safety Shut-off 200.00

Prices F. O. B. Factory

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Los Angeles California

NATURAL GAS GASOLINE OPERATIONS

Compiled by E. T. Knudsen
Department of Commerce, Bureau of Mines, Division of Mineral Resources and Statistics

ONE hundred and forty-three natural gas gasoline plants with a daily indicated capacity of 1,425,200 thousand cubic feet, report a recovery of 41,013,882 gallons of natural-gas gasoline from 27,991,867 thousand cubic feet of gas treated in August. This is an increase of 981 barrels in daily average production.

Utilization of natural-gas gasoline amounted to 850,411 barrels, a decrease under July of 81,678 barrels. Daily average utilization of 27,433 barrels was 4,068 barrels less than daily average production of 31,501 barrels.

Stocks of natural-gas gasoline at the end of August amounted to 748,692 barrels, of which 29,992 barrels were reported by natural-gas gasoline plant operators and 718,700 barrels by refinery operators. This is an increase of 126,110 barrels over July stocks. This stock figure of 748,692 barrels is approximately twenty-seven days supply at the current rate of consumption.

Production of gasoline during the month of August amounted to 4,950,761 barrels, a daily average of 159,702 barrels. This is a decrease in total production of 22,644 barrels or .46 per cent under July output and an increase of 747,264 barrels or 17.78 per cent over the output of August 1926.

Of the total gasoline produced 29,547 barrels were reported as finished gasoline produced by natural-gas gasoline plant operators. Production of gasoline from cracking processes increased in August to 239,234 barrels.

Stocks of gasoline show a decrease of 449,724 barrels during August and at the end of the month amounted to 11,034,580 barrels. This stock figure includes 39 barrels of finished gasoline reported by natural-gas gasoline plant operators.

CALIFORNIA NATURAL GAS GASOLINE PRODUCTION, DISTRIBUTION AND STOCKS
August, 1927

PRODUCTION *Type of Plant*	*Gas Treated M.C.F.*	*Natural-Gas Gasoline Produced Gallons*	*Gasoline Recovery Per MCF Gas Treated*
Oil Absorption	17,322,555	25,995,980	1.501 Gal.
Compressor	260,139	402,041	1.545 "
Combination Comp. and Oil Absorption	9,671,115	14,565,456	1.506 "
Charcoal Absorption	738,058	48,261	.065 "
Drip	.....	2,144	..... "
TOTALS	27,991,867	41,013,882	1.465 "
Finished Gasoline produced at plants			29,547 Bbls.

Note—The figures formerly under "Combination Oil and Charcoal Absorption" are now included in the "Oil Absorption" figures.

DISTRIBUTION			
Stocks First of Month	..... Bbls.	622,582	Bbls.
Production during Month	..... "	976,521	"
Quantity mixed with crude or unfinished oils	205,385 "		
Used in blending at Refiniries	522,910 "		
Stocks end of Month	748,692 "		
Used at Plants, Shortage and Evaporation losses	15,891 "		
Balance	106,225 "		
	1,599,103 "	1,599,103	"

STOCKS			
Natural-gas Gasoline held by Natural-gas Gasoline Plant Operators	1,259,660 Gal. or	29,992	Bbls.
Natural-gas Gasoline held by Refiners	30,185,400 " "	718,700	"
TOTALS	31,445,060 " "	748,692	"
Finished Gasoline (Motor Fuel) held by Natural-gas Gasoline Plant Operators			39 BBls.

J. E. HARE NOW ON BOARD OF PETROLEUM CORPORATION

J. E. Hare, vice-president and general manager of the California Gasoline Company, Los Angeles, has been made a member of the directorate of the California Petroleum Corporation, a California corporation, effective about September 1.

ADDING STORAGE TANKS AT WYOMING GASOLINE PLANT

The New York Oil Company, at its newly purchased natural gasoline plant in Salt Creek field, Wyoming, is adding more storage tanks.

NATURAL GASOLINE MUST PASS CORROSION TEST

After October 1st natural gasoline must pass the corrosion test in order to meet specifications of the Natural Gasoline Manufacturers' Association.

SOVIET GOVERNMENT ORDERS ABSORPTION PLANTS

The Soviet Government recently ordered two 2500-gallon portable absorption plants from the Southwestern Engineering Corporation, Los Angeles, the equipment having already gone forward to be installed in the Grozny oil fields just north of the Caspian Sea.

LARGE GAS LINE TO CARRY MONROE GAS TO ARKANSAS

Contracts have been placed for a 16-inch gas line from the Monroe, La., gas field to Eldorado, Arkansas, a distance of 57 miles. The project is expected to cost approximately $950,000, and the line is to be in operation late this year. It is planned to extend this gas line from Eldorado to Memphis, Tenn., shortly after the first unit is completed. The line is being built by H. C. Morris and associates of Dallas, Texas.

Mercury *in* Orifice Meters

(*Continued from Page 39*)

forms a seal at the bottom of the tube for the full length of the tube when filled with acid solution. A 5 per cent solution of nitric acid is then placed in the tube. A clean glass bottle is placed at the bottom outlet of the tube in order to receive the purified mercury. Another container in which is placed the unpurified mercury is located at the very top of the long glass tube. Mercury is admitted from the container in the form of a fine spray in the acid solution. The mercury trickles down through the acid solution and is drawn off at the bottom in a purified condition. Once the apparatus is started and the feed set correctly, no further attention is required.

Purification by Sulphuric Acid and Mercurous Sulphate: This method is carried out in an apparatus which consists of a separatory glass funnel of about a half gallon capacity. The funnel is suitably supported so that a glass receiving jar may be placed at its outlet to receive the pure product. A small quantity of pure mercury is placed in the bottom of the separatory funnel to act as a seal and then about 300 c.c. of concentrated sulphuric acid and 25 grams of mercurous sulphate are poured into the funnel.

The impure mercury is fed into this apparatus from a container located above the funnel. The mercury is fed so as to produce a fine spray. The impure mercury is freed from foreign metals by the action of the sulphuric acid and the mercurous sulphate and is thoroughly dried by passing through the concentrated acid so that the pure and dry mercury may be drawn off from the bottom of the separatory funnel.

In either of the acid methods of purification, the mercury will be found to be free from any signs of acid, provided the proper procedure is followed as outlined.

GASOLINE EXTRACTION UNIT AT HELIUM PLANT

A new gasoline extraction unit is now being installed by the Kentucky Hydrogen and Oxygen Company at its helium plant in the Dexter field of Northern Cowley County, Kansas. The plant started operations late in August but shut down when it was found that natural gas from the Dexter wells carried a gasoline content that interfered with the helium extraction. When the gasoline unit is completed it is estimated that from 500 to 600 gallons of high-test will be run daily as a valuable by-product in the helium process.

Helium from the Dexter plant goes under contract to the United States government for use in dirigible airships. Lieut. R. R. Bottoms is in charge of the plant.

NEW CHAPLIN-FULTON PLANT BEING BUILT

A contract has been let and plans announced by Chaplin-Fulton Manufacturing Company for a new four story plant and office building at 38-40 Penn Avenue, Pittsburgh, Pa. Wm. McKee, president of the company, states that the building will be started at once and will be in use by January 1st. The new plant will be located on property adjoining the present factory. In addition to the new structure, a full story will be added to the present plant.

During construction there will be no interference with production and when the work is completed the company will have a 100 per cent increase in capacity.

What makes a Balloon burst?

THE billions of bubbles in a Campbell Absorber are really billions of tiny balloons under pressure, constantly distorting, rubbing against one another, bursting and remaking. This agitation continues throughout the tower, intimately exposing gas to oil film. There are no dead areas, no channeling. By the time the wet gas has traveled through the sixteen individual pools in continuous contact with the absorbing oil, the gasoline has been thoroughly extracted.

J. A. Campbell

Consulting—Designing—Constructing
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The Babcock & Wilcox water tube boilers
Corliss high speed and poppet valve engines
Babcock & Wilcox superheaters
Hamilton compressors
Green fuel economizers
Wheeler Condenser & Engineering Co. condensing machinery
Cochrane feed water heaters (open and closed)
Cochrane feed water metering heaters
Cochrane feed water softeners (hot and cold processes)
Cochrane steam and oil separators
Cochrane flow meters
Moore automatic fuel oil regulators
Diamond soot blowers
Lagonda tube cleaners
Copes feed water regulators
Lagonda automatic boiler stop valves
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IT IS DIFFERENT
IT STARTS HOT

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The Economy Way is the

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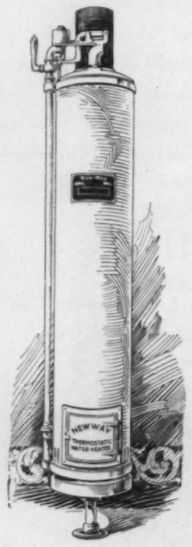

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In the New Way the pilot light heats the water in the coils,—always—there is no reheating of the coils and heater every time the hot water faucet opens.

The New Way saves gas, water and time.

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Made and Guaranteed by

New Way Manufacturing Company, Inc.

894 FOLSOM STREET
SAN FRANCISCO

Pacific Service Employees Association

(*Continued from Page 37*)

particularly applies to the Christmas season, and an investigation is made in order that we may be assured that the families of our deceased and disabled members are properly provided for. All of the sick are visited on Christmas day, and all are remembered in some manner by the Association.

This, in brief, covers the work of the Benefit and Loan Committee, and to those who so unselfishly give of their time to this very important work the Association is deeply indebted.

EDUCATIONAL SERVICE

In the year 1918, the educational work was commenced and carried on by means of lectures until 1921. In the latter year, the present system of courses was adopted and we now have eighteen courses available.

With some courses the use of standard text books is recommended and, with the Association bearing a portion of the cost of same, the student is enabled to procure the text at considerably less than the retail price. The courses all, either directly or indirectly, treat upon the business in which the company is engaged.

When the General Educational Committee decides a certain Course would be welcomed by the members, they first look over the field for the one who, in their estimation, is best qualified to write the contemplated Course. The next step is to impress the individual selected with the necessity of such a Course and obtain his cooperation. With but one exception all of our Courses have been written by members of the Association who have received no remuneration for their labors.

The Course, nearing completion, is then advertised among the members, and they are advised as to the subject matter contained therein and the date when the Course will be available. Those who desire to take up the Course are advised to get in touch with the Chairman of their Local Section Educational Committee and it is his duty to form the classes and select the Class Leaders.

Classes have varied in size, ranging from four or five students to as high as ninety-six. The best results, however, have been obtained with classes not exceeding fifteen in number. In classes exceeding this number, the opportunity of personal instruction becomes very limited, the Class Leader being unable to devote a great deal of time to any one individual.

Particular attention is given to the selection of the Class Leader. To find an individual with an expert knowledge of the subject, combined with the ability to impart that knowledge to others, is no easy task, and in a great measure the failure or success of a class depends upon the Class Leader.

The classes are at last formed, and the Courses, now being available, are forwarded to the Class Leader, and the actual instruction begins. The classes meet after working hours and are taken step by step through the Course. When they have finally completed the Course, a written examination is held and the papers, together with an attendance record furnished by the Class Leader, are forwarded to the General Educational Committee for grading.

Those successfully completing the Course are presented with a certificate, and a record of their achievement forwarded to the Personnel Department of the Company. The certificates are usually presented at an affair held by the Association, and the actual presentation made by an official of the Company. The value of the educational work is obvious, and it is considered one of the Association's most important activities.

SOCIAL ACTIVITIES

Under the heading "Social Activities" may be classed the entertainments, dances, whist parties, picnics, etc. As to which of the foregoing has the greatest appeal there can be no answer. What will prove a great success in one Section will prove a flat failure in another, and as a result our affairs vary greatly in character. One of our most popular affairs, the Annual Picnic, had an attendance this year of nearly 5,000 members, their families and friends.

In Oakland and San Francisco farce comedies and light operas produced by the Association members have proven very popular. With casts recruited entirely from the members of the Association we have very successfully staged the following light operas: "The Mikado"; "The Geisha"; "The Prince of Pilsen", and "Robin Hood."

Two of the farce comedies most recently staged, after being produced before our members, were presented for the entertainment of the patients at the Government Hospitals, located in Livermore, Palo Alto, and San Francisco. Mare Island, Fort Scott, and Disciplinary Barracks, Alcatraz Island, also had the pleasure of witnessing the productions, and in all instances, the efforts of the players were greatly appreciated.

Last year, twenty-one Christmas Parties were held throughout the various Sections and these affairs are annually looked forward to with a great deal of interest, particularly by the children. At these parties members' children up to the age of twelve years receive presents, candy and fruit.

Lists are prepared by the various Sections showing the number of children in the Section, their age and sex. The lists are forwarded to San Francisco, and suitable presents are purchased and shipped to the Section.

ASSOCIATION SPORTS

Sports such as baseball, basket ball, golf, tennis, bowling and horseshoe pitching naturally interest quite a number of our members. As may be imagined, baseball interests the largest number and the rivalry between Sections in this sport is quite keen.

Athletic activity for the women members is quite a problem. In one Section rowing and volley ball are quite popular although this may be due largely to local conditions. In localities where possible, arrangements are made with the Young Women's Christian Association, enabling the girls to enjoy a swim when desired.

VACATION CAMPS

The Recreational Activities Committee has charge of our Vacation Camps, three in number. These camps are situated on the shores of lakes which are on the property of the Company. Lack of space prohibits a description of each camp so we will confine ourselves to a brief description of our largest camp, Camp De Sabla, located twenty-six miles east of Chico, California. This camp is easy of access and consists of six cabins and a like number of tents. Situated on the shores of a beautiful lake, midst a splendid

grove of trees, Camp De Sabla affords the members an opportunity of enjoying a vacation under ideal conditions.

The camp is equipped with shower baths and other modern conveniences and the cabins, particularly, are very attractive.

The Association provides, gratis, the quarters, light, cooking utensils, cots and mattresses. Members are allowed the use of the quarters assigned them for a period of two weeks, this being the usual vacation granted by the Company.

A publication, "NEWS", is issued by the Association monthly. Its popularity is evidenced by the fact that it has become necessary to increase "NEWS" from six pages in 1921 to twenty-eight pages in 1927.

DISABILITY PLAN

One of the various activities of the Association, and the one most beneficial, is the Pacific Service Employees Disability Plan. A committee was appointed to investigate numerous health benefit plans, and as a result of their investigation, subsequent reports and recommendations, the Pacific Service Employees Disability Plan formally came into being, August 1, 1923, with a membership of 1,500.

Membership in the Plan is confined solely to members of the Association, and each member joining the Plan pays $1.00 Admission Fee, and a contribution of $1.00 per month. The monthly contributions are deducted by the Company, in accordance with a list furnished them, from the member's compensation, and in this manner the cost of collection, which is quite an item, is eliminated.

Benefits of $20.00 per week are paid, commencing on the eighth day of disability, and continuing for fifteen consecutive weeks. At the end of this period no further benefits can be paid until a lapse of fifteen weeks, and, if the member is still disabled, we will then pay for another fifteen weeks. Following the payment of the second fifteen weeks' benefits, no further payment can be made until the member has returned to, and been at work for the Company for a period of not less than fifteen consecutive weeks.

Membership in the Plan has grown from 1,500 in 1923 to 4,500 in 1927, and benefits amounting to $113,858.80 have been paid to the members. Based upon an experience of four years we are firmly of the opinion that our Disability Plan is sound financially as we have, in addition to having paid $113,858.80 in benefits, built up a reserve fund of $50,000.

What the future holds for our Employees Association will, in the mind of the writer, be governed largely by the interest held in its affairs by the members. There is a saturation point as regards membership, as membership must be recruited from the employees of the Company, and the number is, of course, limited. But there should be no saturation point as regards interest. Therefore, our constant efforts are required to stimulate interest and make the Association of more value to its members.

TO LAY DISTRIBUTION LINES AT FARMERSVILLE, LA.

A franchise to distribute natural gas at Farmersville, Union Parish, Louisiana, has been granted the Northwest Louisiana Gas Company of Shreveport. Work will begin soon on the laying of the city distributing system, which will be a four-inch 12-mile line from Farmersville to connect with its main line from Monroe to Ruston, which was recently bought from the Ruston Gas Company.

SPRAGUE METERS

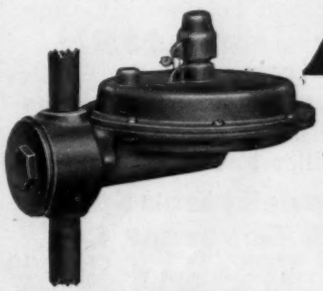
Represent Twenty-five Years of Progress

We are proud of our Service in the West

Sprague Meter Company

Los Angeles, California
San Francisco, California
Houston, Texas
Davenport, Iowa

MODEL 10 SERIES
With or Without Mercury Seal



Spring Type
Also furnished in Dead Weight Type

Reynolds Gas Control Since 1892

Products for all kinds of Pressure Reduction—for either artificial or natural gas.

GOVERNORS — Intermediate Pressure, Triple Outlet, Holder, Toggle Type Street.

REGULATORS—High Pressure Service, Low Pressure Service, High Pressure Line, Single and Double District Station.

VALVE—Automatic Quick Closing Anti Vacuum.

REYNOLDS GAS REGULATOR COMPANY
Anderson, Indiana

FIRE BRICK

THROUGHOUT the West, the Gas Industries are depending on the Fire Brick service of this pioneer organization. Standard sizes for—

LININGS — CHECKERS
BOILER SETTINGS

are carried in stock for quick shipment. If special or hand-made shapes are required, our plant is especially well equipped to make them.

Fire Clay, Hollow Tile—all clay products used by the Gas Industry—are included in our service.

Write or phone us for complete information.

GLADDING, McBEAN & CO.

SAN FRANCISCO LOS ANGELES
SEATTLE PORTLAND

284

The "Beacon"

New Safety Features

Pilot Safety Control and Thermostatic Safety Control

Have greatly increased the sales of "The Beacon" Automatic Storage Water Heaters.

Made in Four Models

Several sizes in each Model.

Beacon Water Heater Co.

GEORGE F. PEARSE

776 South San Pedro Street
Los Angeles

Governors—

—Automatic
—Balance
—High and Low Pressure
—District
—Reverse Flow
—Fuel Gas
—Service
—Special

Oxide Purifying Material Equipment

Back Pressure Valves
Boosters
Photometers
Unison Telemetric Gauge
Gas Timers
Gauges
Street Department Tools
Gas Tape
Miller Packing

Connelly Iron Sponge & Governor Co.

NEW YORK CHICAGO

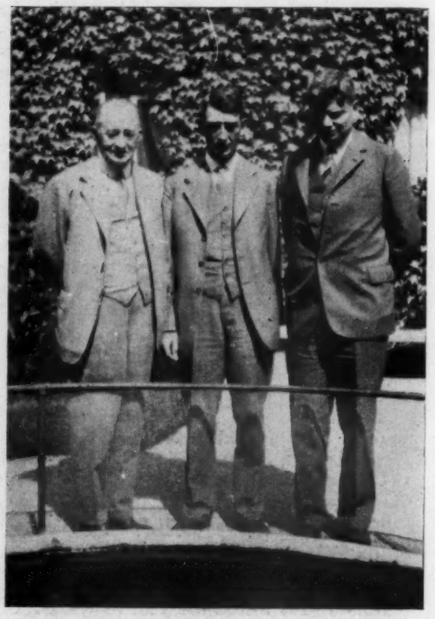
C. B. Babcock Co.
135 Bluxome St., San Francisco, Cal.

34th Annual Convention *of* P. C. G. A., Santa Cruz

(*Continued from Page 27*)

insight into the widening scope of the gas industry's program, in his inspiring article entitled "Gas—Today and Tomorrow."

F. J. Schafer, last year's president of the Pacific Coast Gas Association, spoke to the topic "The Newer Thought in the Gas Industry" in the closing general session, Friday afternoon. Mr. Schafer on other occasions has given voice to his prophetic recognition of the industry's need for getting the viewpoint of its ultimate consumers—women; he stressed again his belief that women should have a more definite place in the Association program. The appointment in the Public Relations Section of a special women's committee headed by Ruth E. Creveling of the San Diego Consolidated Gas and Electric Company may be interpreted as the first formal step in this general direction. Certain it is that women were accorded a more active part than ever before in the work of the convention, both in the Public Relations and Commercial Sections, and the attendance of women delegates exceeded that of previous conventions.



P. C. G. A. administrations, past, present and future. Left to right, C. H. Dickey, vice-president; W. S. Yard, retiring president; L. M. Klauber, president-elect. Photo taken at the Santa Cruz Convention

AWARDS

Throughout the convention the rulings of the committee on awards were awaited with great interest. The awards committee, consisting this year of C. W. Platt, F. E. Seaver (Accounting Section); L. F. Galbraith, R. J. Thompson (Commercial Section); W. H. Barton, F. H. Bivens (Public Relations Section); R. S. Fuller, J. E. Kelley (Technical Section), passes upon the merits of convention papers and reports, and places the Association stamp of approval upon outstanding work. Its report, made at the annual banquet Friday evening, which concluded the convention, ruled as follows:

No association reports or papers were

considered to merit the highest P.C.G.A. token—the Association Gold Medal. However, this was not to say that there was no work of a high order done this past year. Far from it, for honorable mention went to three reports, that on Payroll Procedure and Personnel Records, B. H. Parkinson, chairman; that on Customer Accounting, O. L. Moore, chairman; and the report on Condensing and Scrubbing, S. C. Schwarz, chairman. President W. S. Yard's special award of $50, offered last year at the Pasadena convention, to go to the paper or report adjudged the best during the year, was divided evenly between B. H. Parkinson and O. L. Moore.

The coveted Basford Trophy, bestowed upon the Section judged to have contributed the most effective work of the year, went to the Technical Section, and was placed for safe keeping in the hands of R. M. McCalley, general chairman of the winning section.

Another award made at the annual banquet went to M. L. Foster of the Coast Counties Gas and Electric company. This was the Public Relations Section cup bestowed upon the winner in the finals of the convention three-minute speaking contests, of which there were two. These contests were features of the two luncheon programs, presided over by E. G. McCann. The first contest, Tuesday noon, was between nine representatives of the gas company association members, speaking on the subject, "If It's Done with Heat, You Can Do It Better with Gas," and participated in by Ray Trowbridge, W. E. Richmond, G. S. Wade, C. E. Rutledge, M. L. Foster, J. T. Sullivan, Clarence J. Ellis, N. L. Hoff, and Pearl C. Lentz. M. L. Foster was winner in this fray with Miss Lentz second. The second contest, Thursday noon, on the subject, "Our Function in the Gas Industry," was between manufacturer members' representatives, and included R. J. Thompson, H. L. Spencer, Ted Hatlan, W. L. Hoyt, and R. W. Campbell. Ted Hatlan, fifteen-year-old representative of the Reliance Manufacturing Company, won the right to speak in the finals, which were held at the annual banquet, and there lost by a narrow margin of points to Mr. Foster. The finals were on the subject "What Public Relations Means to Me."

STUNTS NIGHT

Thursday evening, September 15, there was held another association contest, and a novel one. Under the sponsorship of the Public Relations Section, and presided over by that Section's small but mighty chairman, D. L. Scott, there was staged a Stunts Night Contest, for a trophy given by A. B. Day of the Los Angeles Gas and Electric Corporation. The stunts were designed to bring out important public relations lessons. Three companies were represented, The San Diego Consolidated Gas and Electric Company in a playlet entitled "Give 'er Gas", by Ruth Estelle Creveling; Los Angeles Gas and Electric Corporation in another playlet, "A Friend for the Company", by Eugene P. Ramsay; and the Pacific Gas and Electric Company in an entertaining turn of dialogue and sleight of hand, best described in its title "Twenty Minutes of Hokum." "A Friend for the Company" was the winner of the cup, and Marguerite E. Kerlin, who took the part of "Mrs. Averidge" (a consumer who thought her gas bill too high), accepted the cup at the annual banquet on behalf of the author and the rest of the cast. The part of Mr. Keene (investigation man) was taken by Wm. M. Fisher, and the part of the phantom housewife of former days who appeared briefly to take the audience back in mind to the drudgery accompanying the use of solid

Complete Adjustment for Changed Wind Requires Only Five Seconds Time of One Man

1. Greatly Increased Effective Cooling Surface.
2. Decided Up-Circulation of Air, Improving Performance.
3. Reduced Size of Complete Tower.
4. Reduced Pumping Head, Saving Power.
5. Reduced Foundation Expense.
6. Reduced First Cost Per Gallon of Water.
7. Reduced Windage Loss, With Resultant Saving in Make-Up.
8. Elimination of Water Spray Nuisance.

Write at once for Bulletin 2-A

JACKSON ENGINEERING & EQUIPMENT CO.

909 E. 59th St., Los Angeles, Calif.

502 National Bank of Commerce Bldg., Tulsa, Okla.

The STRICKLER Ratchet Pipe Cutter

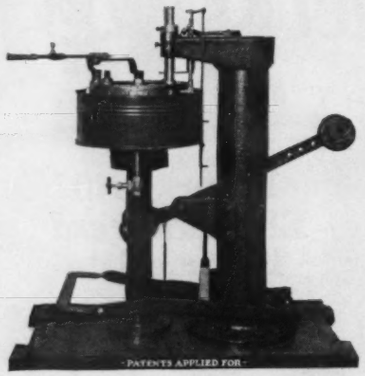
The STRICKLER Ratchet Pipe Cutter automatically cuts cast iron, steel and wrought iron pipe (from 1½ to 30" in diameter) by hand (either in the trench or in the shop).

You can cut any pipe from any position easily. Simply pump the handle and the STRICKLER does the rest. Order your STRICKLER Now

W. W. STRICKLER & BROS.

1475 Oak Street Columbus, Ohio

Test Your Fittings First!



Why wait until your pipe fittings are on the job before knowing whether they are fit to do the work? It costs time, money and labor to change *after* installation.

You can make sure your fittings are free from operating defects and tests have proved from 30 to 96 per cent are defective—*before* installation with the

Universal Pipe Fittings Testing Machine

It's sure and quick in its work. And measured in terms of what it can save you in work that may have to be undone, it's a mighty profitable investment. Several of the largest fittings users on the Pacific Coast use and highly indorse the Universal. Specially adapted for testing Meter Swivels, Pipe Saddles, Reducing Couplings, Straight and Angle Valves, Tees, Ells, Crosses and Stop Cocks.

Send for details today

FERNHOLTZ MACHINERY COMPANY

"Leaders Since 1883"

2053 East 38th St. Los Angeles, California

Pacific Coast Representative for
W. A. RIDDELL CO., Successors to
Hadfield-Penfield Steel Co., Bucyrus, Ohio
Crossley Machine Co., Trenton, N. J.

Oliver-Borden Thickners and Oliver Filters

The most efficient and satisfactory method of dewatering

Lampblack

Oliver Continuous Filter Co.

SAN FRANCISCO
503 Market Street

NEW YORK
33 West 42nd Street

LONDON
11 Southampton Row

JOHANNESBURG, SOUTH AFRICA
E. L. Bateman, Locarno House

OAKLAND, CALIF.
5th & Madison Sts.

HONOLULU, T. H.
W. A. Ramsay, Ltd.

fuels, was enacted by Mrs. E. R. Ramsay, wife of the author. The Public Relations Stunts Night was a decided addition to convention doings, and will possibly be included in next year's program.

FIRST AID CONTEST

Still on the subject of special convention features, another innovation at Santa Cruz was the First Aid Contest, staged Monday night between five teams representing the Los Angeles Gas and Electric Corporation, the Midway Gas Company, Southern California Gas Company, Pacific Gas and Electric Company, and San Diego Consolidated Gas and Electric Company. This contest was sponsored by the Technical Section to stimulate interest in safety education. E. W. Bullard directed the contest, and F. J. Schafer placed a beautiful cup at stake as a perpetual trophy, won for the first year by the Pacific Gas and Electric Company's San Rafael team, consisting of A. E. Englebright, captain; W. A. Kohloff; Jas. Ward; N. S. Hamilton; J. E. Tourtellotte; and Safety Engineer G. Tannyhill. The L. A. G. and E. team took second, and Southern California Gas Company's team third.

Four other cups, one from the Safety Engineers of California, and three from the Los Angeles Gas and Electric Corporation, also figured as safety contest prizes, as well as seven gold pieces given by President W. S. Yard, and seven gold medals given by the Coast Valleys Gas and Electric Company.

GOLF TOURNEY WINNERS

Another classification of awards bestowed at the annual banquet went to winners in the annual association golf tourney, directed by W. M. Thompson. There were 64 entered for the tournament, which was run off on Wednesday. Clyde Potter, with a low net of 64, got his name on the Basford-Pederson-Babcock Trophy, and in the same breath fell heir to a set of irons given by W. S. Yard. W. D. Dickey won low gross with an 82. Winners in the various flights were as follows: First flight, Harry Lee; second flight, R. S. Fuller; third flight, W. M. Thompson; fourth flight, Barney Pederson; fifth flight, W. S. Yard; sixth flight, C. R. Grow. C. B. Babcock had the distinction of turning in the largest gross on P.C.G.A. records, a 128, and won undisputed right to a suitable trophy. Prizes other than those won by low net were the gifts of W. M. Thompson.

Something new developed in connection with appliance exhibits this year. As an evidence of cooperation in the A.G.A. Laboratory program, the Commercial Section of the association arranged an exhibit made up almost entirely of Approved appliances. The advertising committees of the Commercial and Public Relations Sections also jointly produced an effective display of gas company advertising, of several classes—financial, "good will", appliance, and the like—and in a variety of media including newspaper, magazine, direct mail and outdoor advertising. Manufacturers' literature was also displayed.

Worthy of mention, too, is the fact that "Balloon Juice", inaugurated last year as the Convention journal, teller of tales official and otherwise, made its anticipated appearance on three occasions during the convention dates, with J. Charles Jordan as Ye Editor.

Even a passing review of the convention would be less than adequate if it failed to mention the high point in convention entertainment—the barbecue in Big Basin, twenty-six miles from Santa Cruz among the Big Trees. Put on in veteran style by John D.

Kuster, this event will stay in the minds of convention delegates when other things have faded. The barbecue luncheon, the ball game between North and South, the marathon dancing, and the other features of the barbecue on Convention Play Day, Wednesday, September 14, were all of the best.

Convention ladies were well cared for during the five-day meeting, with Mrs. Henry Bostwick as their official hostess. Perhaps the outstanding item in their special entertainment was the bridge tea in the Redwood Terrace Gardens at Brookdale Lodge, a mountain retreat near Santa Cruz.

Convention committees, who worked with President W. S. Yard, Executive-Secretary Clifford Johnstone, and others of the P. C. G. A. administration in the staging of this successful Thirty-fourth Convention, were as follows:

MORRIS F. WALES, General Chairman
Coast Counties Gas and Electric Company.

EXECUTIVE COMMITTEE

R. L. Cardiff, Coast Counties Gas and Electric Company; J. Chas. Jordan, Pacific Gas and Electric Company; E. G. McCann, Pacific Gas and Electric Company; J. F. Pollard, Coast Valleys Gas and Electric Company; D. C. Ray, Pacific Gas and Electric Company; W. M. Thompson, Reliance Manufacturing Company; M. F. Wales, Coast Counties Gas and Electric Company.

SUB-COMMITTEE CHAIRMEN

Hotel Accommodations, R. L. Cardiff; Registration, Morris L. Foster; Entertainment, J. F. Pollard; Dances, K. C. Tomlinson; Barbecue, John D. Kuster; Banquet, P. S. George; Transportation, A. E. Strong; Golf, W. M. Thompson; Luncheons, E. G. McCann; Editor "Balloon Juice," J. Chas. Jordan.

LADIES' ENTERTAINMENT COMMITTEE

Mrs. Henry Bostwick, *Chairwoman*

E. V. DAILY JOINS MUELLER FURNACE COMPANY

E. V. Daily has recently been appointed Pacific Coast distributor for Gas-Era Warm Air Furnaces and Gas-Era Steam, Vapor and Hot Water Boilers, manufactured by L. J. Mueller Furnace Co. of Milwaukee, Wis.

Mr. Daily for the past eleven years has served as manager of the Gasteam department of Jas. B. Clow and Sons of Chicago. Previously he was for many years connected with the commercial departments of the Pacific Gas and Electric Co. of San Francisco, the Portland Gas and Coke Co., and other Pacific Coast gas properties.

CARBON PLANT AUCTIONED

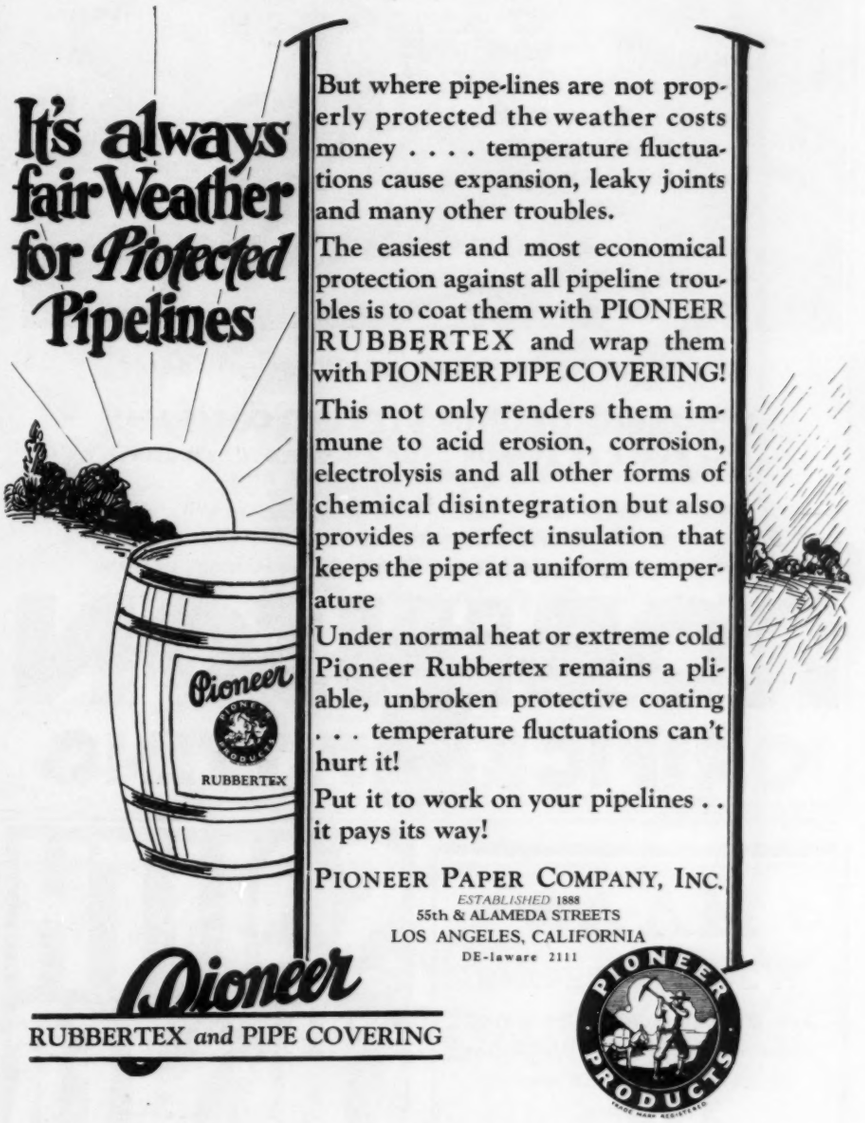
Colorado's only carbon black plant, which was built by the Rio Blanco Carbon Company to operate in the White River gas field in Rio Blanco County, has been sold to Frank Barmettler of Denver at a sheriff's auction.

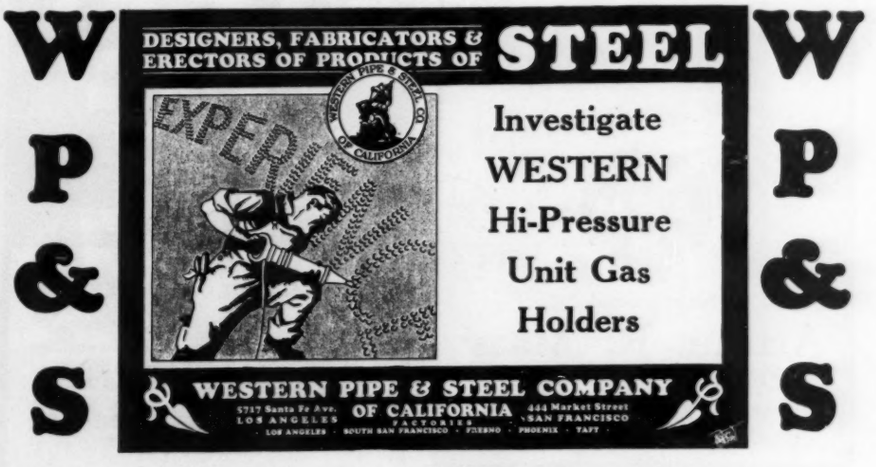
NEW MEXICO LINE REPORTED ABOUT TO BUILD

Plans are understood to be under way for the construction of a gas line from the Artesia and Maljamar fields of Eastern New Mexico to Roswell and intermediate towns for the purpose of delivering gas for both domestic and industrial use.

MANAGER AT SAN LUIS OBISPO

C. W. Charles, formerly with the Santa Maria Gas Company at Santa Maria, Calif., is now district manager of the utility at San Luis Obispo.


It's always fair Weather for Protected Pipelines
But where pipe-lines are not properly protected the weather costs money . . . . temperature fluctuations cause expansion, leaky joints and many other troubles.
The easiest and most economical protection against all pipeline troubles is to coat them with PIONEER RUBBERTEX and wrap them with PIONEER PIPE COVERING!
This not only renders them immune to acid erosion, corrosion, electrolysis and all other forms of chemical disintegration but also provides a perfect insulation that keeps the pipe at a uniform temperature
Under normal heat or extreme cold Pioneer Rubbertex remains a pliable, unbroken protective coating . . . temperature fluctuations can't hurt it!
Put it to work on your pipelines . . it pays its way!
PIONEER PAPER COMPANY, INC.
ESTABLISHED 1888
55th & ALAMEDA STREETS
LOS ANGELES, CALIFORNIA
DE-laware 2111
Pioneer
RUBBERTEX and PIPE COVERING
PIONEER PRODUCTS


W P & S
DESIGNERS, FABRICATORS & ERECTORS OF PRODUCTS OF STEEL
EXPERIENCE
Investigate WESTERN Hi-Pressure Unit Gas Holders
WESTERN PIPE & STEEL COMPANY OF CALIFORNIA
5717 Santa Fe Ave. LOS ANGELES
444 Market Street SAN FRANCISCO
LOS ANGELES · SOUTH SAN FRANCISCO · FRESNO · PHOENIX · TAFT
W P & S

In Service Everywhere

plant, Dominguez California. Center: Two ROBINSONS on Roscoe Lease, Bowlegs, Oklahoma. Right: A ROBINSON at Hun- Left: Battery of ROBINSONS at compressor tington Beach, California.

Are your orifice installations up to date?

ROBINSON ORIFICE FITTING COMPANY

1435 SANTA FE AVENUE - LOS ANGELES, CALIFORNIA

California Distributors:

Westcott & Greis, Inc., Los Angeles; Jensen Instrument Co., Los Angeles

Mid-Continent Distributors:

B & A Specialty Co., Tulsa, Houston; Westcott & Greis, Inc., Tulsa, Dallas

ROBINSON ORIFICE FITTING

MAAS

Water Reagents

Are Scientifically Prepared After An Analysis of the Water To Remove Scale Forming Elements

Maas Water Reagents are not patented "cure-alls." All elements contributing to the forming of scale are studied and a reagent developed specially in the Mass Laboratories for the purpose.

A R M M

Manufactured by

Arthur R. Maas

Chemist

308 East Eighth St.

Los Angeles, California

SOUTH CHESTER STEEL PIPE

Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

SOUTH CHESTER TUBE CO.

Chester, Pa.

The Ideal Behind *the* Blue Star Seal

(*Continued from Page 30*)

customers into desirable accounts and thereby developing a market for additional appliances in both new and old homes. This is done by creating a public desire for a complete domestic gas installation as a unit and on a par with plumbing and electric wiring units.

The steps necessary to put the plan into operation locally are quite simple and are only three in number.

1. The local company sets up what it considers the minimum requirements for a modern gas equipped home, careful consideration being given the gas rates in effect, characteristics of the population, and other local conditions. The requirements cover the number of appliances which must be installed in the home to merit the Blue Star symbol and include specifications for adequate piping and ventilation to insure thoroughly satisfactory service over a long period of years. The appliances to be included therein must be approved by the American Gas Association Laboratory. In earlier days, the installations were made according to the best known local practices, but our official installation code will very shortly be available, and will then become the standard method for installing appliances in all Blue Star homes.

2. Arrangements are made for indicating homes meeting the requirements just referred to by identifying them with the large size Blue Star Poster and by placing in these homes an official Blue Star Certificate, both of which can be secured from Association headquarters.

3. Popularizing the Blue Star symbol as the sign of a modern home, equipped with approved appliances, by all appropriate means locally and promoting it by a suitable sales follow-up plan.

In some cases the plan has been sponsored entirely by the gas company, while in others the local activity has been inaugurated over the name of a co-operative group which includes the local master plumbers, heating and piping contractors, and appliance dealers who are glad, in return for this publicity, to sell only appliances which have been approved by the A. G. A. Laboratory.

As I have mentioned, our list of approved appliances and installation requirements will supply the material necessary to carry out the provisions of item No. 1. The most effective means of demonstrating to the public the value of a home equipped with ample gas service is to advertise and demonstrate such a home locally. Attractive houses open to the public have been demonstrated in 28 of the larger cities throughout the United States and in addition to these, the Plan is now being inaugurated by gas companies in the following cities:

Boston, Mass.; Worcester, Mass.; Fall River, Mass.; Bridgeport, Conn.; Dayton, Ohio; Mason City, Iowa; St. Louis, Mo.; Springfield, Ill.; Decatur, Ill.; Peoria, Ill.; Aurora, Ill.; Lincoln, Neb.; Denver, Colo.; Memphis, Tenn.; Poughkeepsie, N. Y.; Beacon, N. Y.; Albany, N. Y.; Rochester, N. Y.; Indianapolis, Ind.; Anderson, Ind.; Terre Haute, Ind.; Hammond, Ind.; South Bend, Ind.; Omaha, Neb.; Madison, Wis.; Milwaukee, Wis.; Council Bluffs, Iowa.

A special committee, called the Mid-West Blue Star Association, is also under way in Chicago which includes the Peoples Gas, Light and Coke Co., and the gas companies in and around that city.

For the purpose of popularizing the completely equipped gas home, the Association has prepared a series of nine advertisements to be used in announcing the opening of Blue Star homes, subsequently featuring various uses of gas, which are available in sample form on request. Mats for these advertisements may be had in two different sizes so that they will fit local conditions and the copies are adaptable to change.

The principal appeal of the Blue Star Plan is directed to the public and the main piece of advertising is a booklet which tells the story of the Blue Star home in terms of complete gas service and quality appliances and emphasizes the value of the various individual uses of gas in the home. These booklets are brief in text and of such a size and weight that they are convenient to mail out with the gas bills at no extra postage cost, if this method is desired. They may be given out at lectures or demonstrations and passed out at the Blue Star homes. They are supplied by the American Gas Association at printing cost and carry a local imprint on the back cover, inviting the general public to visit the Blue Star Home. In addition to this and other material, the Publicity and Advertising Section of the American Gas Association has distributed advertising material on the Blue Star Seal of Approval, in the form of posters, cards, etc., which, no doubt, many of you have received. This assistance has been made available free of cost, to any of our company members promoting the sale of tubing and appliances bearing the Blue Star Seal of the Testing Laboratory. It consists of four newspaper advertisements, each one in two and three column widths, a large window display card, a mailing card and a list of approved appliances.

The Blue Star Plan offers a means of placing approved equipment before our customers in a more effective and attractive manner than has ever been undertaken by the gas industry before. Thus we have two new and very appropriate mediums—one for improving our service, and the other for presenting it in a more attractive and interesting manner.

CONSUMERS SURVEY

For several years there has been a great deal of interest in the subject of national advertising. Just what form this material should take, however, has been a much debated question. Our Committee on National Advertising quite naturally decided that a national survey should be made as a necessary preliminary to any program of this kind. As mentioned by Mr. Macbeth, this survey was accomplished through an independent research agency, canvassing some 38 cities in 24 states and the District of Columbia. A survey conducted by the Federation of Women's Clubs was also very helpful in preparing a final analysis of the situation.

A committee under the leadership of Mr. Clifford E. Paige, Vice-President of the Brooklyn Union Gas Company, and one of the outstanding commercial men of the country, is studying the results of these various surveys and it is understood that this committee will report some definite recommendations on the subject of general or co-operative advertising at the September 14 meeting of our Executive Board.

The Rate Fundamentals Committee of the American Gas Association recently published a pamphlet entitled "Better Forms of Rates For Gas." There is considerable sentiment, particularly in certain sections of the country, in favor of the three part rate and I believe that the leaders of our industry are now quite generally agreed on plans offering

JOHNSON

Mixers and Valves for Pipe Burners

designed right! **built right!**

Johnson Mixers and Valves embody those elements of design and construction which tend to promote lasting, positive, and efficient gas burner control. If you will write to us, we will gladly tell you about our special ability to provide this type of equipment in any desired quantity.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Pacific Coast Representative—C. B. Babcock Co.
135 Bluxome Streeet San Francisco, California

Stockton
Fire Brick Company

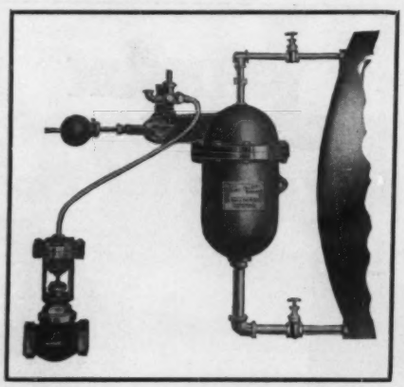
FIRE BRICK, INSULATING BRICK
HIGH TEMPERATURE CEMENT

High Grade Refractories
for

GENERATOR LININGS
CHECKERS
BOILER SETTINGS

OFFICE:
Rialto Building,
San Francisco

WORKS:
Stockton,
California



Dependable—of course

The Vigilant Liquid Level Regulator, by remote control, is designed to maintain a constant oil level in both the absorbing tank and the still, where gasoline is manufactured by absorbing the gasoline in oil and subsequently separating it from the oil by distillation.

This regulator will accommodate itself to any type of absorber or steam still, and maintain a constant oil level under pressure.

Thirty-five years of successful experience in the manufacture of regulators assure to the purchaser absolutely accurate and reliable equipment.

Write for Catalogue

The Chaplin-Fulton Mfg. Co.

Organized 1884—Oldest Builders of Gas Regulators in the Country. Built in all Sizes, From 1 Inch to 24 Inches; For All Service. 1 oz. up to 1,600 lbs. Pressure to Square Inch.

28-36 Penn Avenue **Pittsburgh, Pa.**

REPRESENTATIVES:

WESTCOTT & GREIS, Inc.
Sales and Service
Dallas—Los Angeles—Tulsa

JNO. W. CRAWFORD
Sales Engineer
1855 Industrial St. Los Angeles

C. B. Babcock Company

"We Serve"

135 Bluxome Street, **San Francisco, California**

greater encouragement through their rate structures to the use of gas.

MIXED GAS RESEARCH

Last April research work on mixed gases was started by our establishment under the supervision of the Mixed Gas Research Committee of the Technical Section of our Association. This activity will undoubtedly extend over a period of at least three years. In many localities it is more economical, and in others an absolute necessity to mix gases. There are many phases of this problem, particularly from the standpoint of utilization, on which we lack definite information. Many gas company executives need more reliable data on just how far they may vary specific gravities, heating values and gas pressures without interfering with the successful operation of their appliances. Realizing that this subject is of such vital importance to the gas industry, and in an effort to secure some reliable information at the earliest possible moment on its most important points, the problem was divided into three major parts: (1) A determination of the effect of varying specific gravities, other factors remaining constant; (2) The effect of varying heating values, other factors remaining constant; and (3) The effect of varying specific gravities, and heating values, other items remaining constant. Our findings so far indicate that greater variations in specific gravity can be accommodated by the majority of appliances than originally anticipated. A downward change, however, has more undesirable effects than one in an upward direction. This is due to the fact that when gravities are increased, primary air injection is also increased, while the B.t.u. input is lowered. Where the gravity is reduced, the primary air injection is decreased, and the actual B.t.u. input increased, both factors that generally encourage incomplete combustion if carried to extremes.

Some joint research carried out by our organization and the Case School of Applied Science, located in Cleveland, indicates that where the odor of aldehydes is noted during the burning of gas, that this is almost positive proof of incomplete combustion. This is interesting news and something appliance engineers have desired information on for some time.

Several cities have seen fit to adopt ordinances regulating the installation and sale of gas appliances. Two notable examples are those of Baltimore, Maryland and Hartford, Connecticut, while New York City, Cohoes, N. Y., Newark, New Jersey and Greenwich, Connecticut, now have ordinances regulating the sale of flexible gas tubing. Quite a number of other cities throughout the country are also considering similar legislation.

The legality of the Baltimore ordinance was recently attacked. Prior to the trial, however, the ordinance was revised, the Approval Requirements of the American Gas Association in general, adopted as the requirements of the City of Baltimore; and the situation now, insofar as our Laboratory is concerned, remains virtually the same as it has been during the past two years.

The activities of the Laboratory have increased in every Department. In spite of the fact that it has been testing gas ranges for almost two years, we still have as much work of this kind on hand as ever before in our history. The creation of new models and the decision of manufacturers to submit their appliances for test, will probably keep the various departments as busy as they now are for several years to come. With this thought in mind, the Laboratory Managing Committee have prepared plans for the con-

struction of a new building and a special committee appointed by our president have recommended to our Board the expenditure of roughly $150,000 for such purposes.

From the first inception of gas to the present date, our customers have been exploring the fields relating to its use. Some appliance manufacturers certainly unintentionally, but nevertheless surely, have led them down a path where, for some, the romance of gas has begun to fade. With the dealer it has been largely a matter of attracting the buyer's interest, following it up, breaking down sales resistance and closing the sale without giving proper thought to the quality of service rendered or the reaction which might eventually result. If this procedure had been allowed to continue unrestrained, we would certainly have been faced with a far greater number of dissatisfied customers, and sooner or later a tremendous loss in the per capita sales of gas. The Testing Laboratory was established to maintain a high standard of public service. It offers a reliable means of stabilizing competition by establishing an accurate index of the general merit of appliances, particularly from the standpoint of efficiency, safety and reasonable durability, and means the use of equipment that should prove an asset rather than a hindrance to the use of gas.

Regardless of statements appearing from time to time concerning the effect of competitive fuels on our business, I can see no fundamental reasons why it should suffer any unusual competition from present sources. I will admit there are certain localities, particularly in the Pacific Northwest, with which you are all familiar, where electrical competition is particularly keen; however, the fact that several of the companies located there are our most progressive and successful ones, proves that this competition can and is being met. Naturally, I do not mean to imply that the gas industry can overlook any of its opportunities or that it will not have to fight and fight hard for its logical share of the customer's dollar. Nevertheless, I do feel that where heat is desired, gas is, and can always be shown to be the logical fuel. Looking into the future, we see many new developments such as the enactment of smoke ordinances, legislation governing the selection of fuels, improvements in our gas manufacturing and mixing processes, greater high pressure transmission systems, changing habits of our customers, and improvements in the construction and design of our gas burning equipment, all of which should result in greater popularity for our product. Therefore, if we can continue to improve our service, making gas cleaner, its use more efficient and absolutely safe, in conjunction with reasonable rates, we should be entirely successful in overcoming the greatest portion of our present sales resistance.

Our industry can no longer afford, in this highly scientific age, to shape its future policies by the customs and traditions of the past. The public demands, and will continue to insist on, a higher and higher class of service. The Testing Laboratory and the Blue Star Sales Stimulation Plan both possess great public appeal; they are designed to accomplish practically the same purpose, and, if given proper support, they will place the quality of our service outside of the shadow of doubt and assist very materially in maintaining our industry's position forever in the sunlight of prosperity.

OCEANSIDE PLANT STARTS

The South Coast Gas Company of Oceanside, Calif., began distributing gas from its recently constructed plant early in September.

KEY *Special* PIPE JOINT COMPOUND

Water-Proof

KEY SPECIAL PIPE JOINT COMPOUND will effectively seal screw thread and gasket joints for such service as Gas, Water, Steam, Compressed Air, etc.

One of the many advantages this compound has over the commonly used red leads and oils, etc., is that the pigment will not settle to the bottom of the container, thereby holding the contents in equal suspension at all times ready for service.

KEY SPECIAL PIPE COMPOUND is not a quick hardening cement but a plastic lubricant and filler that will seal the most obstinate joint with ease.

You may test the high quality of this product by taking a small quantity between the fingers which will immediately demonstrate the wonderful lubricating qualities along with the "pull or drag" that makes possible a permanent seal without resorting to cementing materials, most of which are very undesirable and impracticable to use.

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Gas Heating Devices

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"Magic Way" Gas Furnaces
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"Cole" Floor and Wall Heaters
"Hall" Floor Furnaces

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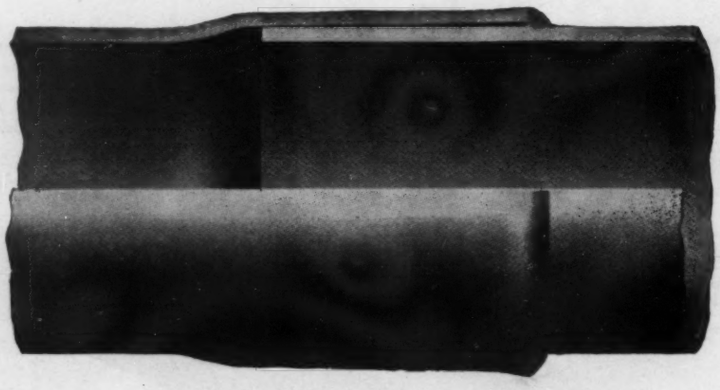

There Are No Weak Points in Astco Pipe Lines

Every inch of pipe lines constructed with "ASTCO" Seamless Steel Line Pipe is sufficiently strong to withstand the highest hydrostatic pressures encountered in service. The joints are just as strong and liquid tight as the body of each length of pipe, due to the superior material and the special design of the slip joint. The welded joints insure maximum strength and prevent leakage.

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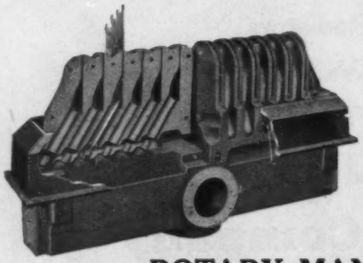

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under broad variations in gas heat values and pressures.

THIS QUALITY HAS A VITAL BEARING ON HEATING COSTS.

ROTARY MANUFACTURING CO.

5720 Long Beach Avenue Los Angeles, California

Gas—Today *and* Tomorrow

(*Continued from Page 25*)

business has taken in the utility family, the other branches of which have also shown material gains. Public confidence is well shown in the sale of stock to customers, which has grown rapidly, and in the fact that the utilities have led all other industries in new money requirements in the past few years. From 1922 to 1926 the public service companies have obtained a total of $6,038,000,000 of new money for extension and betterment programs, and in the past five months of 1927 an additional $908,757,005.

The outlook, then, seems to be one of unprecedented expansions. Present fields of utilization are being extended and new ones are being entered. The chief problems that confront the industries are not, I think, those of development, but rather of control. Rapid growth must be so regulated that all departments of the industry's organization are harmonious and co-ordinated, and undue emphasis must not be placed upon any single phase of utilization or exploitation. A unity of development must be preserved. The question as it presents itself to me is that of guarding against the danger of going ahead too fast and without sufficient centralization of control. The gas industry has always been successful in this respect in the past, and I feel that the recent amalgamation of the American Gas Association and the Natural Gas Association of America will assure its continued stable progress in the future.

Economical Preheater Installation

(*Continued from Page 38*)

plant, it is best to connect the water return line to all the boilers and to have a separate steam line from the steam header to the preheaters. This will make it possible to use any one of the boilers on the preheater service, thus rotating from one boiler to the other, which will help to keep all the boilers clean and prevent any pitting which might occur due to too long use of distilled water. If the load is not sufficient for one boiler then it is best to take the steam for the preheater from all the boilers and return the water to any one boiler. Thus the load will be evenly distributed and better pressure and temperature regulation will be obtained.

When the boiler installation is made in units sufficiently large for one unit to carry the whole plant load, then it is better to make the water return line conection at some other point than the blow-off line or the feed water line. Since in such an installation it is necessary to continually feed a fresh supply of water to the boiler, there will be more or less sediment in the boiler which should settle in the mud drum or around the blow-off line opening. The water returning from the preheater through the blow-off line will keep the water stirred up and prevent the sediment from settling. This is more noticeable in a water tube boiler. In one installation it was found that the mud and sediment were settling at the rear end of the steam drum. It so happened that provision had been made for a connection at the bottom of the rear end of the steam drum, so the water return line was changed to that point and the trouble eliminated.

GAS COMPANY USES OWN PRODUCT IN FORGES

The Los Angeles Gas and Electric Corporation has displaced the coal forges in its blacksmith and welding shop with specially constructed gas-fired forges.

'UNACCOUNTED-FOR GAS'

Comments about *Western Gas* from our readers, old and new.

"Fills a field in the West that no national paper can possibly do; a Western paper dealing in Western problems."—*G. I. Drennan,* Field Supt., Pacific Power & Light Co., Walla Walla, Wash.

"*Western Gas* is a splendid trade journal and satisfies a definite need in the gas industry on the Pacific Coast."—*J. Earl Jones,* Asst. Sales Mgr., Portland Gas & Coke Co., Portland, Ore.

"Nothing gets overlooked from cover to cover; something of interest on every page."—*S. W. Jillson,* Plant Foreman, So. Calif. Gas Co., Colton, Calif.

"A very valuable publication."—*William Maddock,* Storekeeper, L. A. Gas & Elec. Corpn., 4800 Staunton Ave., Los Angeles, Calif.

"Each issue is awaited with interest, as there is news and information of value in each number."—*Rudolph Jenny,* Asst. Rate Engr., Pacific Gas & Electric Co., San Francisco.

"It is not only instructive, but enjoyable reading."—*O. L. Adkins,* Asst. Foreman, L. A. Gas & Elec. Corpn., Pasadena, Calif.

"I bought *Western Gas* to watch your househeating load and how it affected your distribution system."—*J. P. Haftenkamp,* Genl. Supt., Rochester Gas & Elec. Corp., Rochester, N. Y.

"All articles are of value; I prefer articles on correct installation of appliances and on sales."—*R. R. Robinson,* Div. Sales Mgr., P. G. & E. Co., Chico, Calif.

"I find your magazine both interesting and instructive."—*E. B. Morey,* Asst. Dist. Supt., So. Counties Gas Co., Pomona, Calif.

"A good, high-grade journal for those interested in gas; it gives a good variety and always well put."—*Wm. Regan,* Engr., City of Pacific Grove, Pacific Grove, Calif.

"I find *Western Gas* interesting and a source of useful and practical information, and wish you continued success."—*Chas. E. Norris,* Supt., Fairfax Municipal Gas System, Fairfax, Okla.

"I read your magazine regularly and find much of value in both written articles and ads."—*Walter A. Korman,* Asst. Foreman Mains, L. A. Gas & Elec. Corp., Los Angeles.

"The industrial gas field on the Pacific Coast is coming to the front by leaps and bounds, and more attention should be given to it both by *Western Gas* and the manufacturers of industrial equipment."—*R. J. Phillips,* Industrial Gas Sales, San Diego Cons. Gas & Elec. Co., San Diego.

"I read *Western Gas* from cover to cover, and think it great. I would like to see more about mains and services."—*John W. Green,* Asst. Foreman Gas Service, L. A. Gas & Elec. Corp., Los Angeles.

The Reliance Balanced Valve Regulator

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Reliance Manufacturing Company

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A WESTERN GUIDE to INDUSTRIAL PURCHASING

Readers interested in any articles not listed in these pages are cordially invited to advise *Western Gas* of their wants and every effort will be made to furnish a list of the proper manufacturers. Addresses of companies listed on these pages may be found by consulting their advertisements in this issue.

Absorption and Compression Plant Equipment
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell.
Chaplin-Fulton Mfg. Co.
Fluor Construction Co.
Jensen Instrument Co.
The E. A. Key Company
Southwestern Engineering Corp.
Western Pipe & Steel Co.

Absorption Towers
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Abrasives
Abrasive Engineering Corp'n.

Adjustable Plugs
Lattimer-Stevens Co.
Western Pipe & Steel Co.

Agitators
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Aluminum Bronze Powder for Paint
W. P. Fuller & Co.
Hill, Hubbell & Co.

Analyzers
C. F Braun & Co.
A. R. Maas, Laboratories.
Smith-Emery Co.

Annealers (Bar, Blank, Strip)
Pacific Meter Works.

Anti-Fluctuators
Pacific Meter Works.

Apparatus, Experimental Gas
The Alpha-Lux Co., Inc.
The Bartlett Hayward Co.
Pacific Meter Works.

Appraisals and Valuations
Charles R. Collins.
Smith-Emery Co.

Automobile Tires
Truck Tire Service Co.

Bags, Gas Main
C. B. Babcock Co.
Connelly Iron Sponge & Governor Co.
Mueller Co.
Safety Gas Main Stopper Co.
Semet-Solvey Engr. Corpn.

Barometers
Jensen Instrument Co.
Westcott & Greis, Inc.

Bench Iron Work
The Bartlett Hayward Co.
General Gas Light Co.

Blast Gates
Montague Pipe & Steel Co.
Semet-Solvay Engr. Corpn.

Blocks and Tiles, Fire Clay
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Semet-Solvay Engr. Corpn.
Stockton Fire Brick Co.

Blowers and Boosters
Ingersoll-Rand Co.

Blowpipes
Montague Pipe & Steel Co.

Boiler—Brickwork
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Boiler Equipment
E. A. Key Co.

Boiler Maker's Tools
E. A. Key Co.

Boilers, Gas-Fired
C. B. Babcock Co.
Baker Iron Works.
Montague Pipe & Steel Co.

Boiler Settings, Pipe and Boiler Insulation
Pioneer Paper Company.
J. T. Thorpe & Son, Inc.

Boilers, Waste Heat
Baker Iron Works.
The Bartlett Hayward Co.

Boilers, Water Tube
Baker Iron Works.
Montague Pipe & Steel Co.
Southwestern Engineering Corp.
Western Pipe & Steel Co.

Boxes
Baker Iron Works.
Semet-Solvay Engr. Corpn.

Brass (rods, sheets, tubes, wire)
Mueller Co.

Breakers
Ingersoll-Rand Co.

Breeching (Boiler and Stack)
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Brick, Firebrick
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Semet-Solvay Engr. Corpn.
Stockton Fire Brick Co.

Brick, Firebrick—Installation
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Brushes, Wire Pneumatic
Abrasive Engineering Corp'n.
Ingersoll-Rand Co.

Buildings, Steel
Baker Iron Works.
Western Pipe & Steel Co.

Bunkers, Steel and Concrete
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Burners, High Pressure
Lee B. Mettler.
Rotary Manufacturing Co.

Burners, Low Pressure
C. B. Babcock Co.
General Gas Light Co.
Johnson Gas Appliance Co.
Lee B. Mettler.
Payne Furnace & Supply Co.
The Bartlett Hayward Co.
Rotary Manufacturing Co.
Standard Gas Equipment Corp.

Burners—Oil
Rotary Manufacturing Co.

By-product Recovery Apparatus
The Bartlett Hayward Co.
Oliver Continuous Filter Co.
Semet-Solvay Engr. Corpn.

Calorimeter Accessories
Pacific Meter Works.

Calorimeters
The Alpha-Lux Co., Inc.
Pacific Meter Works.

Cases, Meter
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Casinghead, Gas Meters
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.

Casing and Tubing (steel)
Montague Pipe & Steel Co.
Semet-Solvay Engr. Corpn.
South Chester Tube Co.

Casing—Iron
South Chester Tube Company

Cast Iron Pipe
Semet-Solvey Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Castings
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Cement
Abrasive Engineering Corp'n.
Stockton Fire Brick Co.

Cement, High Temperature
Stockton Fire Brick Co.

Cement—Plastic
Pioneer Paper Company.

Centrifugal Pipe
United States Cast Iron Pipe and Foundry Co.

Charging Machines (retort, etc.)
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.

Checker Brick
Abrasive Engineering Corp'n.
American Refractories Co.
Los Angeles Pressed Brick Co.
Semet-Solvay Engr. Corpn.
Stockton Fire Brick Co.

Chemical and Gas Testing Apparatus
The Alpha-Lux Co., Inc.
Pacific Meter Works.
Stauffer Chemical Co.
Westcott & Greis, Inc.

Chemists, Analytical
A. R. Maas, Laboratories.
Smith-Emery Co.

Chimneys, Radial Brick
American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.

Chimneys, Radial Brick Installation
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Chutes (coal, coke, ash)
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Clamps and Sleeves, Pipe
Mueller Co.

Clamps, Service
Mueller Co.

Cleaners, Service
C. B. Babcock Co.
Pacific Meter Works.

Coal Gas Plants
Charles R. Collins.
Semet-Solvay Engr. Corpn.
The Bartlett Hayward Co.

Coal Tar Products and Chemicals
W. P. Fuller & Co.
A. R. Maas, Laboratories.

Cocks
C. B. Babcock Co.
Johnson Gas Appliance Co.
Lattimer-Stevens Co.
Merco Nordstrom Valve Co.
Mueller Co.
Geo. D. Roper Corporation.

Collectors, Dust
Western Pipe & Steel Co.
Semet-Solvay Engr. Corpn.

Compressors, Air
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Oliver Continuous Filter Co.

Compressors, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, High Pressure
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, Portable
Ingersoll-Rand Co.

Condensers
Baker Iron Works.
The Bartlett Hayward Co.
C. F. Braun & Co.
Ingersoll-Rand Co.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.

Condenser Boxes
Baker Iron Works.

Condenser Tubes
Semet-Solvay Engr. Corpn.

Controllers
Jensen Instrument Co.
The Foxboro Co., Inc.

Controlling Devices, Electric
L. R. Teeple Co.

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Jensen Instrument Co.
The Bartlett Hayward Co.
C. F. Braun & Co.
The Foxboro Co., Inc.
L. R. Teeple Co.

Cooling Systems
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.

Cooling Towers
C. F. Braun & Co.
J. A. Campbell
Fluor Construction Co.
J. B. Gill Corporation.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.

Counters, Revolution
Jensen Instrument Co.

Couplings
Pittsburgh Equitable Meter Co
The Bartlett Hayward Co.

Coverings (Tank, Boiler, Cold and Steam Pipe)
Pioneer Paper Company.

Cubic Foot Bottle
Pacific Meter Works.

Cutters, Pavement
Ingersoll-Rand Co.

Cutters, Pavement
Ingersoll-Rand Co.

Cylinders, Compressor
The C. & G. Cooper Co.
Semet-Solvay Engr. Corpn.

Dephlegmaters
C. F. Braun & Co.
J. A. Campbell
Southwestern Engineering Corp.
Semet-Solvey Engr. Corpn.
Western Pipe & Steel Co.

Diaphragms, Meter
Chaplin-Fulton Mfg. Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Diggers, Clay
Ingersoll-Rand Co.

Discharging Machines (retort, etc.)
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.

Displacement System, Tar
Semet-Solvey Engr. Corpn.

Door, Clean-out
Baker Iron Works.
Semet-Solvay Engr. Corpn.

Drills
Ingersoll-Rand Co.
Mueller Co.

Drill Pipe—Iron
South Chester Tube Company

Drill Pipe—Steel
South Chester Tube Company

Dryers
Payne Furnace & Supply Co.

Elevators
Baker Iron Works.

Engineers and Engineering Service
J. A. Campbell
Charles R. Collins.
J. B. Gill Corporation.
The Bartlett Hayward Co.
A. R. Maas, Laboratories.
Smith-Emery Co.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Engines, Diesel
The C. & G. Cooper Co.

Engines, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Engines, Oil
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Engines, Steam
Ingersoll-Rand Co.

Evaporating Apparatus
The Bartlett Hayward Co.
C. F. Braun & Co.
United States Cast Iron Pipe and Foundry Co.
Southwestern Engineering Corp.

Excavators, Ditch and Trench
The Cleveland Trencher Co.

Exchangers, Heat
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Exhausters
Ingersoll-Rand Co.
United States Cast Iron Pipe and Foundry Co.

Experimental Apparatus
The Bartlett Hayward Co.
Pacific Meter Works.

Extractors
The Bartlett Hayward Co.
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Faucets, Drain
Mueller Co.

Felt—Deadening
Pioneer Paper Company.

Filters
Oliver Continuous Filter Co.
United States Cast Iron Pipe and Foundry Co.

Fire Clay and Products
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.

Fire Brick Contractors
J. T. Thorpe & Son, Inc.
Stockton Fire Brick Co.

Fittings
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Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Fixtures, Lighting (Domes, Portables, etc.)
C. B. Babcock Co.
Welsbach Company.

Feed Water Heaters
C. F. Braun & Co.
Southwestern Engineering Corp.

Fire Brick
Abrasive Engineering Corp'n.
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American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.
Semet-Solvay Engr. Corpn.

Flanges
Montague Pipe & Steel Co.
Pittsburgh Equitable Meter Co
Semet-Solvay Engr. Corpn.
Westcott & Greis, Inc.

Flooring—Industrial
Pioneer Paper Company.

Forgings
Baker Iron Works.
Payne Furnace & Supply Co.
Pacific Gas Heating Co.
Geo. D. Roper Corporation.
J. T. Thorpe & Son. Inc.

Furnaces, Floor
Payne Furnace & Supply Co.
Pacific Gas Heating Co.

Furnaces, Lead Melting
C. B. Babcock Co.
The Estate Stove Co.
Johnson Gas Appliance Co.
Mueller Co.
Payne Furnace & Supply Co.

Gas Analysis Apparatus
The Foxboro Co., Inc.
Jensen Instrument Co.
Pacific Meter Works.

Gas Masks
Safety Gas Main Stopper Co.

Classified Advertising

Classified advertising five cents per word; minimum $2.00 per insertion. Situation Wanted advertisements up to 50 words will be published three consecutive issues without charge.

Situations Wanted

Note: *Western Gas* will publish free of charge, under this heading, advertisements of situations wanted. Maximum length, 50 words; additional space at classified rates five cents per word per insertion. Copy should be neatly typewritten on one side of paper only, and should be mailed to reach *Western Gas* not later than the 20th day of the month prior to publication date.

A successful factory representative of gas appliances, 34 years of age, with splendid record of accomplishment, possessing personality, ability and unusual aggressiveness, on account of wife's health desires to locate in Pacific Coast States, and so wishes to open correspondence with responsible concern with view of making lasting and profitable connection. Successful experience as salesman and division sales manager. Prefer opportunity in sales management or business promotion department. Best of personal, business and financial references. Address Box A-11, care of *Western Gas*.

Home Service Director, employed, desires change. Five years experience with combination companies. In traveling for these companies have used nearly every type of range, gas and electric. Fine success with cookery classes. Since coming East have gone through many of large stove and electrical manufacturing concerns. Address Box A-12, care of *Western Gas*.

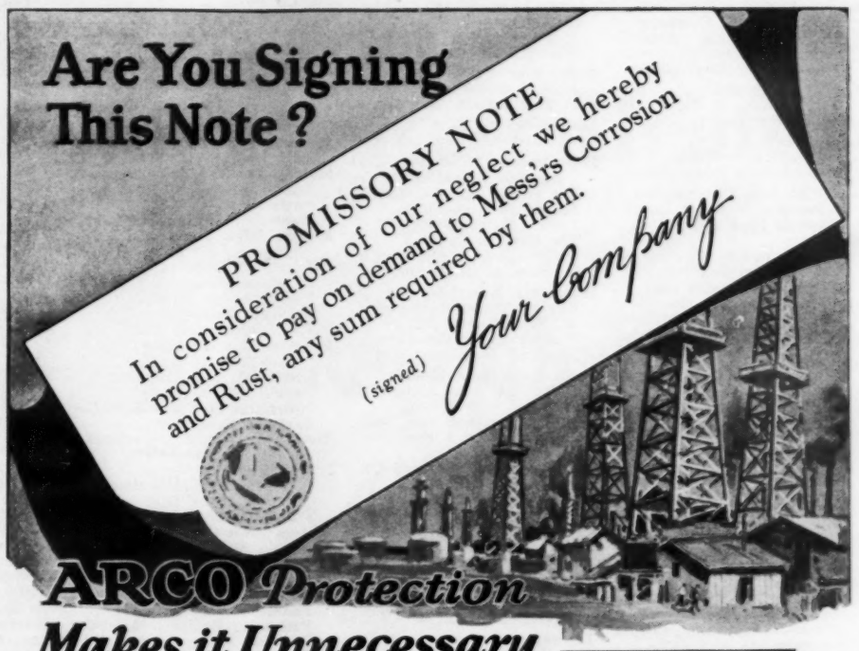
LONE WATER HEATER SALESMAN SETS HIGH MARK

A. Montangue, water heater salesman for the P. G. and E. in Chico, Calif. territory sold 30 heaters during the first three weeks of a month's campaign in that locality. House to house canvass in some instances, and following up leads supplied by other gas company employees, was the method used. The P. G. and E. offered prizes to the employees who turned in the greatest number of live prospects that lead to sales in connection with this campaign.

DIXIE GAS AND UTILITIES BUYS TWO TEXAS SYSTEMS

The Dixie Gas and Utilities Company has bought the Commercial Gas Company of Galveston for approximately $1,000,000. The properties acquired include a pipe line from the Waskom field to Tyler and Longview, Texas. Plans of the buying company are to immediately extend the line from Tyler to Palestine, Jacksonville and Rusk, leading East Central Texas cities.

The Dixie Company also purchased wells and leases of the Industrial Gas Company in the Waskom field and Greenwood field, including pipe lines in Marshall, where the Dixie owns the distributing system. The consideration in this latter deal was announced as about $500,000.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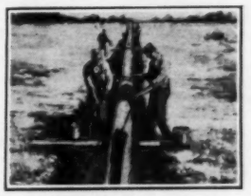
PROMISSORY NOTE
In consideration of our neglect we hereby promise to pay on demand to Mess'rs Corrosion and Rust, any sum required by them.
(signed) Your Company

ARCO Protection Makes it Unnecessary



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The absolute protection of these surfaces is certain and inexpensive, thanks to 46 years' research and experiment of ARCO engineers. *ARCO Metal Paints* weatherproof every surface above ground. *ARCO Save-A-Line*, a special pipe line coating, forms a heavy, tough, non-cracking, protective film that prevents corrosion from moisture and chemical action due to soil conditions.

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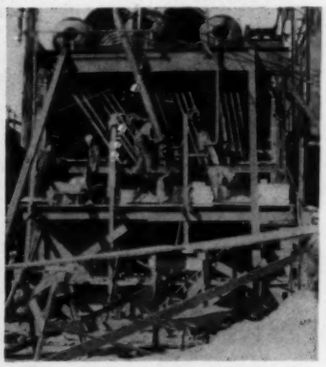
GAS AND OIL DIVISION



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The Foxboro Co., Inc.
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Jensen Instrument Co.
Lee B. Mettler.
Pacific Meter Works.
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Pacific Gas Heating Co.
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J. T. Thorpe & Son, Inc.

Linings—Car
Pioneer Paper Company.

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Mueller Co.
Safety Gas Main Stopper Co.

Mains, Street
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Main, Stopper
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Mueller Co.
Safety Gas Main Stopper Co.

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General Gas Light Co.
Welsbach Company.

Manometers
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Jensen Instrument Co.
Lee B. Mettler.
Westcott & Greis, Inc.

Meters, Air
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Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Meters, Boiler
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.

Meters, Burner Test
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Cast Iron Gas
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Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

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Pittsburgh Equitable Meter Co
Sprague Meter Co.

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Pittsburgh Meter Co.
Pittsburgh Equitable Meter Co

Meters, Consumers
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Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Flow
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Jensen Instrument Co.
Pittsburgh Equitable Meter Co
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Meters, Fluid
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Meters, Gas
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Gasoline and Oil
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Westcott & Greis, Inc.

Meters, High Pressure Distribution
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Pacific Meter Works.
Sprague Meter Co.
The Foxboro Co., Inc.

Meters, High Pressure Iron Case
The E. A. Key Company
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Industrial Consumers
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Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
The Foxboro Co., Inc.

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Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

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Pittsburgh Equitable Meter Co
Sprague Meter Co.
Westcott & Greis, Inc.

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Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
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Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
Westcott & Greis, Inc.

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Pacific Meter Works.
Pittsburgh Equitable Meter Co
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Meters, Test
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Pittsburgh Equitable Meter Co
Sprague Meter Co.
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Meters, Water
Jensen Instrument Co.
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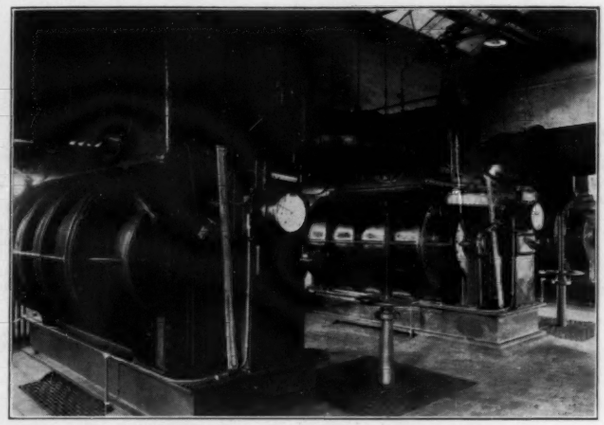

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Stops, Iron Body
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Semet-Solvay Engr. Corpn.

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Connelly Iron Sponge & Governor Co.
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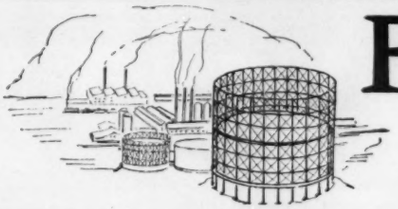

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Nitrokote for Floors (Lacquer)

For floors and dado surfaces of meter rooms, laboratories, engine rooms, offices, etc. Resists gasoline, oil and hot soapsuds. Dries in ½ hour.

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Made especially for protecting meters.

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The light and heat-reflecting qualities of Ful-Lumina make it the ideal paint for Gas Holder crowns and for the inside of waterless holders as well as roofs of buildings —or in fact any metal surface, exterior or interior.

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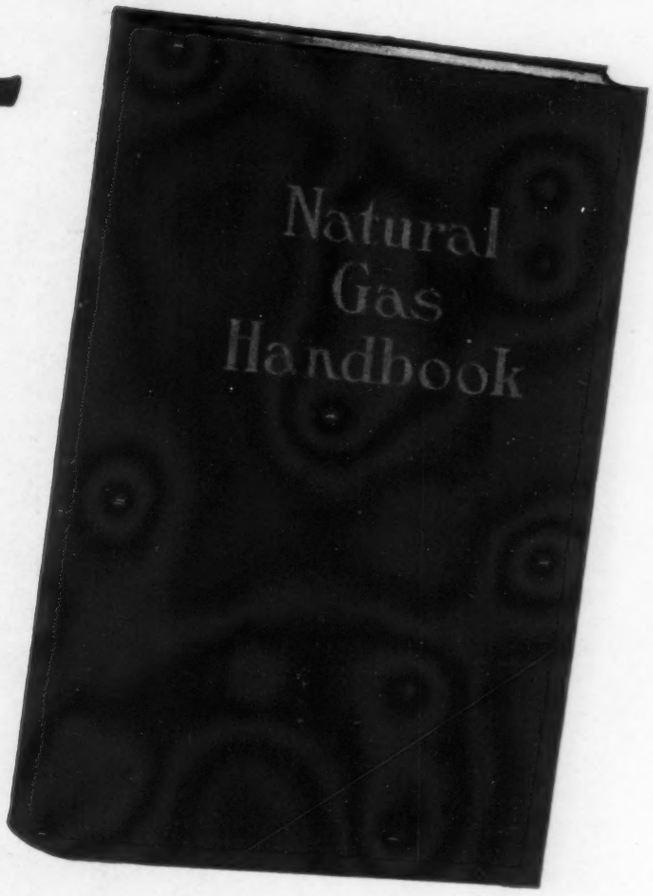

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